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PHYSIOLOGICAL AND THERAPEUTICAL NOTES ON PHYSOSTIGMINA.

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In the VETERINARY JOURNAL for November, 1882 (No. 89, page 317), Prof. Garside gave an elaborate translation of a very able and interesting article on the "Therapeutic Value of Physostigmine in the Treatment of Colic and Impaction" (by Prof. Dieckerhoff, of Berlin). Being struck at the time I read Mr. Garside's translation, I made a *précis* of it, and had it well circulated amongst all veterinary practitioners. This was the means of bringing it prominently before the profession, and, judging from the continuous use of the drug by most of our leading veterinarians, I am now satisfied that the notes Prof. Dieckerhoff published, regarding the action of this alkaloid, physostigmine, can be fully borne out by many eminent English veterinarians; and I am also satisfied that in this alkaloid we have one of the most important therapeutic agents that has yet been discovered, for the treatment of Colic caused by impaction from known or unknown causes. That it will not cure every case of Colic and Impaction Dieckerhoff was careful to point out, especially when Enteritis has succeeded Impaction, or when the muscular coat has lost its irritability, or where a foreign body may block the way; but he was also certain (so am I) that no other known agent is capable of exciting the intestinal peristaltic action with such certainty, or with so little danger to animals, as this alkaloid physostigmine. The substance now under consideration has been introduced into the new British Pharmacopœia, and is, therefore, an official or recognised preparation. It is an alkaloid obtained from the Calabar bean, by dissolving the extract in water, adding bi-carbonate of sodium, shaking the mixture with ether,

and evaporating the ethereal liquid. The subcutaneous injection which I made in November, 1882, and which has been so very extensively employed, contains one grain of the physostigmine in each fluid drachm, and is the minimum dose Dieckerhoff laid down. Respecting the advisability of this dose, I have had under serious consideration since first I introduced it, and have taken counsel with some of our most eminent veterinarians; regarding the physiological action of it, that it is a very powerful remedy, and requires very great care in its administration, will be observed from the following physiological and clinical notes, for which I am indebted to those gentlemen who have taken the trouble to note them for me.

Note 1: By Captain Russell, F.R.C.V.S., Grantham.—I have used the Injectio Physostigmiœ Hypodermicâ ever since it was first introduced by Mr. Allman, and from constant observation am able to speak very highly of its action. I am bound to confess that, in my experience, a dose of two drachms injected subcutaneously is a very dangerous dose. I feel convinced, in cases of Stoppage, given in such doses, the peristaltic action is increased with such violence as in many cases to rupture the walls of the bowel. In my opinion, forty drops is a good standard dose of the solution introduced by Mr. Allman. I have used it extensively in forty-drop doses, without any untoward result that I could possibly trace to the remedy; and in cases of Indigestion, Flatulent Colic, and Impaction of the Colon of the horse, I believe it stands alone as a remedial agent to afford speedy relief.

Note 2: By W. Woods, jun., M.R.C.V.S., Wigan.—You asked me for a few notes respecting a case I mentioned to you some time ago, and which I treated with your hypodermic solution of physostigmine. I have pleasure in forwarding the main features of the case from memory. The subject was a chestnut wagon horse, belonging to the Ince Forge Company. On the 1st of July, 1883, we were sent for to treat him for Colic. He was treated in the ordinary way on the 1st, 2nd, 3rd, and 4th, during which days he never passed any fæces whatever. His pains were of a dull character, not by any means continuous, very little sweating, and the pulse about sixty. He had no appetite whatever, and was not very thirsty. Examination per rectum revealed Impaction of the large bowel, so well marked that one could pit the impacted bowel through the rectum walls. As there was no passage of fæces, and no sign of any on the fifth day, although the horse had plentiful enemata and a fair quantity of purgative medicine, I determined to adopt the then new treatment of physostigmine. The results were really surprising, as showing the action of the drug. On the morning and on the evening of the fifth and sixth days, the horse received hypodermically a full dose of your prepa-

ration. Some ten minutes afterwards, on each occasion, the colicy pains became much exaggerated, and in from ten to twenty minutes longer the horse passed a full dunging of hard fæces. On neither of these days was there any other motion of the bowels. On the seventh day the horse was out of pain and dunging naturally. I may say that I have tried the drug since, often satisfactorily, but never with such remarkable results. This I attribute to the fact that the case seems to have been one purely of paralysis of the muscular portion of the large bowel, and thence one peculiarly suitable for the action of the drug.

Note 3: By A. S. Auger, M.R.C.V.S., Saxmundham.—An aged, chestnut mill horse, that had been cast in the stable the previous night, had eaten nothing that day; was taken out for a short journey in the mill cart with only half a sack of flour, but was unable to proceed, being very dull, head hanging over the manger, which had his morning meal in it. Extremities rather cold, and had not passed any fæces during the day. Pulse 75, and auscultation gave no abdominal sounds. I diagnosed the case as one of Intestinal Straining, and introduced two drachms of the physostigmine per jugular; this roused the intestines to immediate action, and the animal was quickly benefited by the escape of considerable flatus, and in half-an-hour's time by two dungs. He ate a bran mash in the evening, and after that continued to improve, and was in working order next day. No other treatment was used in this case.

Case 2: By A. S. Auger, Saxmundham.—A polled Suffolk cow, suffering from the effects of eating old dried grass, roots, and oak twigs. On first visit she was very much distressed, so much so, that I considered that I had a case of Congestion of Lungs; but auscultation revealed nothing wrong in the chest. Back was arched, nose dry, coat staring, appetite quite gone, grunting very sorely, and loth to move. Pulse 80. Prescribed ordinary treatment for two days, and no alteration in her symptoms, except that pulse rose to 100, and I told the owner he must make up his mind to lose her; but, as a last resource, I would try a new remedy. I then introduced per jugular two and a half drachms of injectio physostigmiâ. This seemed to throw her into extreme distress, so much so that the owner thought she was dying; but in fifteen minutes she had passed three dungs (the first for three days) of ordinary consistence, and soon settled into a state of fair composure. On the following day she had eaten a little soft hay, and the grunting was less frequent, and general aspect much more cheerful; but she had not passed any more fæces. I then administered a pint of linseed oil, and introduced two drachms of the physostigmine into the brachial fascia. This did not cause nearly

the distress of the previous day; but on the following day I heard that she passed three dungs in the course of an hour and half's time after the injection. The following day I found her much better; she had eaten some hay, and a small allowance of moist bait. Pulse 72; and general condition much improved, but had passed no dung during the night or day. Gave another pint of linseed oil, and again introduced one and a half drachms of the physostigmiâ injection into the brachial fascia. This completed the treatment, as the animal got well, and came to her milk nicely.

I give these clinical notes, which are highly interesting; and if compared with the cases Prof. Dieckerhoff quoted in his article, they will be found to fully corroborate his experience of the drug. We must now consider the physiological action of this powerful alkaloid.

1*st, Upon the muscular system.*—Stimulates both voluntary and involuntary muscular fibres; the irritability of the muscle rather than its working power being increased. Stimulates the muscular fibres of the heart; but has no tendency to produce rapid paralysis of these fibres, as is the case with digitalis. Action on the heart counteracted by atropine, involuntary muscle and intestinal, stimulated and peristaltic action much increased. After a large dose, there is first exceedingly active movement of the intestines, then spasmodic contraction, so that the lumen is almost obliterated. This stage of contraction is followed by one of relaxation. It has similar action upon the involuntary muscular fibres of the stomach, uterus, and bladder, and pulmonary bronchi. The action upon the intestines is probably peripheral, the poison in the blood acting upon the muscular fibre, or on the ganglionic nerve cells in the intestinal wall.

Nervous system.—Brain, very little action; may act as a slight irritant.

Spinal cord.—Has a paralysing action upon both the medulla and spinal cord. Excessive doses cause death by paralysing the respiratory centre in medulla. Very little action upon motor and sensory nerves.

Upon circulation.—Causes a rise of blood pressure, probably due to increased power of heart and contraction of the walls of small arteries.

Secretion.—Increases the secretion of salivary, mucous, sweat, and lachrymal glands; probably acts on secreting cells themselves.

Eye.—Causes myosis and spasm of accommodation; diminishes intraocular tension.

Therapeutics.—Physostigmine can be employed in all cases of Constipation due to atony of the intestinal muscular fibre, in

chronic Intestinal Catarrh, in Colic due to impaction of food or indigestible matters. In small doses it might be used with some success in Bronchitis and Dyspnœa, due to muscular fibres of bronchi. The dose of the injection I would limit to forty minims, except in very severe cases, and large cart-horses; then one drachm may be administered.

Besides those gentlemen above mentioned, I might just add that the remedy has been employed with considerable success by Mr. Polding, M.R.C.V.S., of Bury (Lanc.); Mr. M. Hedley, F.R.C.V.S., Darlington; Mr. Dudgeon, M.R.C.S., Sunderland; and many more eminent veterinarians.

SOME FACTS ABOUT ANTHRAX IN CAMELS.

BY RICHARD W. BURKE, M.R.C.V.S., A.V.D., CAWNPORE.

THE interest in the subject of Anthrax cannot flag so long as repeated outbreaks of the disease are witnessed in India; and one or two facts, revealed in the recent outbreak among Government Transport Camels in Cawnpore, may be worth recording, because they are thoroughly practical. It is well established, and, indeed, admitted on all hands, that diseases due to living contagia require certain conditions for their development, and that protection is afforded by a previous attack, as animals which have once suffered do not again take the contagion so readily; that is, the disease does not become enzoötic when introduced. How far this belief is justifiable it is difficult to say, and objections may be urged against the importance assigned to it. There is much which is mysterious in regard to this point; but this one fact is clear, that in practice we sometimes meet a contradiction of our most cherished theories. Immunity in theory notwithstanding, I was struck with the fact of several camels, which recovered from Anthrax, suffering again from the disease in the same outbreak, and in some cases showing not many days between the periods of recovery and next attack. At this point it becomes of great importance to establish *the period of incubation of Anthrax in Camels.* It may be assumed that this varies somewhat in different animals, and in different cases; but the evidence of the recent outbreak in camels clearly points to a period much below the recognised periods. On the 23rd September, I have reported two cases and two deaths; on the 26th, two cases and two deaths; on the 30th, one case and one death; on the 13th October, two cases and two deaths; and on the 30th October two cases and two deaths, in which the animals had recovered from a previous attack and

suffered a second time, after an immunity ranging from eleven days to a fortnight and three weeks.

Evidently, Anthrax cannot attack any animal unless that animal has some individual susceptibility to it; but such a susceptibility is not always removed by a previous attack, and may be even produced in a special way by it, which weakens the system, and tends to produce a more fatal attack.

By experience it is found that no patient is free from infection until six weeks from an attack of Typhoid Fever, Measles, or Diphtheria, and two months in the case of Scarlet Fever. What is the experience in regard to Anthrax in the lower animals? This is a most important point to settle, as it has a practical bearing in questions of segregation, time of discharge from hospital of convalescent animals, &c., in almost every outbreak of this disease. Can the power of infection last for some time after the animal is well again?—a most important fact to be determined. And how long will the infection last, and how long before the risk of giving it to other animals is over? A knowledge regarding the periods of incubation and convalescence is of importance in finding out the source of infection, and more especially in preventing risk of infection by exposure of healthy animals to one which may have just recovered from an attack, and be still convalescent.

The extreme importance of preventing, at every point, the chances of entrance of the contagion into Transport centres, cannot very well be exaggerated. Anthrax may be communicated by the sick animal when the severity of the illness is past, and while recovery is being perfected, since every secretion and excretion of the body, in this disease, is a carrier of infection. Too great care cannot therefore be taken, so long as cases of this disease appear, in preventing animals travelling to a new Transport centre which are, at the time, even more dangerous than when suffering from an acute attack and unable to move about.

I have another point of importance to mention:—

During the last outbreak I saw several cases of abortion in pregnant camels (*a*) following recovery from the disease, or (*b*) during convalescence and attack. The most important clinical observation which comes out of this fact, is the free passage of the bacilli from the dam to the fœtus, independent of the barrier which is said to exist between them. And this is true in practice as in experiment. At the time of my observations, my attention was directed to the notes presented before the Académie des Sciences, by Professor Bouley, on the "migration of pathogenic microbes from the mother to the fœtus and milk." Not long since, it was believed that the placenta constituted an inseparable barrier between the mother and the fœtus. Experiments very recently

made by M. Koubassoff,* and the observations in practice indicate that this is not so. I have examined the blood of the fœtus in several similar cases, in the outbreak alluded to, and always found the bacillus anthracis present in great numbers.

The lack of transmission by the milk is also mentioned as another point of agreement regarding Anthrax in the lower animals. Two cases of death from Anthrax, in the young, are reported in the recent outbreak of this disease in camels, where the mother had recovered from an attack not many days before the disease appeared in the young. In freshly-drawn milk of one camel completely recovered from an attack of Anthrax, I found on examination, the bacillus anthracis present in variable numbers on different days, finally disappearing altogether, until none could be seen on the fifth and on succeeding days. I may add that the milk was rendered thick and scanty, and contained more or less blood from the first, owing to the high fever present in this case. The temperature, according to experience of the present outbreak, rises to 101°, 102°, and 103°, F. (or two, three, and four degrees above normal), on the third, fourth, and fifth days following recovery, coinciding with the disappearance of the local exudations of this disease, and due therefore to fever of re-absorption. This fact has hitherto not been described in the case of Anthrax in the lower animals, and in man; nevertheless it was one of the first points to which my attention was drawn by the temperature readings of several cases of the disease in camels recently under observation, and which recovered from a severe attack. This fever is subject to modifications, however, depending on the amount of effusion present in different cases.

Experience of many former outbreaks of Anthrax, as well as of the present one, has stimulated inquiry on many points, which is of the utmost importance. Next to the effusions of Anthrax, and the fever of re-absorption, is perhaps the extreme emaciation peculiar to it, and which follows in the course of this disease, due probably to the high fever causing increased combustion of tissue. Usually the best conditioned animals are affected, and it is remarkable how rapidly the patients waste away, before one's very eyes, often within a few hours.

There is still a great deal remaining to be learned of the diseases of Transport animals in India, and the time is evidently at hand when our literature, as compared with so many lay productions of the past, must become more worthy of its name.

In regard to prognosis, my experience is that when head symptoms appear, the prognosis is most unfavourable; as

* *British Medical Journal*, *Lancet*, VETERINARY JOURNAL, *Quarterly Journal of Veterinary Science*, &c. 1885.

nearly all cases seen by me died within a few minutes, at most, from the time the head was first noticed to be thrown back, and the neck coiled, the position assumed before death.

Regarding External Anthrax, I think we will all agree with the general view, explaining the lesions of Anthrax by the presence and action of the bacillus anthracis, which is further liable to affect the skin like the germs of other infectious maladies. The greater number of the eruptions, boils, and abscesses, commonly attributable to a "weak state of the blood," the writer believes to be really due to the bacillus itself, when met with during outbreaks of Anthrax among any animals. I have examined, microscopically, the contents of the local lesions, and in every instance found the bacilli present in great numbers; and would remark that the proof of the presence of the bacillus in the external tumours, is of equal diagnostic value to that of the bacillus anthracis in the blood, and other tissues. The question, therefore, as to whether a given case is Anthrax eruption, can only be affirmatively answered if the presence of the specific bacillus can be demonstrated. The external form of Anthrax in the camel, according to our experience, appears to be less fatal than the other forms; and the few cases which died under my treatment were due, probably, to septicæmia, which supervened on opening the abscesses.

ACTINOMYKOSIS IN CORNWALL.

BY GEO. KINNELL, ASSISTANT TO D. MENZIES, VETERINARY SURGEON, ST. AUSTELL, CORNWALL.

THE recognition of the disease Actinomykosis, as such, is comparatively recent. As it may be interesting to have further evidence of the extent to which it exists throughout the country, and as I am unaware of any accounts of the disease in Cornwall having been published, I think the notes and remarks on the following case may be worthy of record:—

On the 12th of last October I accompanied Mr. Menzies on a visit to one of our patients—a bullock, the property of Mr. Williams, Lewhirc Farm, Fowey. While at the farm we had a diseased tongue of a bullock handed us for our inspection. The bullock from which it was taken belonged to a neighbouring farmer, who had noticed that for some time previous to slaughter the animal was not eating properly and was losing flesh. In the condition of the tongue we recognised Actinomykosis. I took the following notes on the appearance of the organ: The tongue is of normal size, except at its middle part, which is slightly enlarged. Nearly the whole of the middle third is dense and indurated to the

touch ; the mucous membrane of the part is of an unhealthy, pale, reddish yellow tint, and in four places patches of it are absent, leaving weakly-looking humid ulcers, which, however, are quite superficial. There is evidence of other ulcers having existed, the smooth cicatrix of one being as large as a halfpenny. A few patches of blood discolouration are present, and on cutting down through them, I find the epithelium is separated from the underlying tissues by a collection of puriform matter. This, I presume, is due to the breaking down of nodules, and is the origin of the ulcers.

On making a longitudinal section of the tongue, considerable resistance is experienced in passing the knife through the indurated part. Except at the middle third, the whole of the surface exposed by the knife has a healthy appearance ; but at this part the surface is very pale, and has scattered over it numerous nodules of a light yellow colour, and varying in size from mere specks to large diffused masses. On passing the fingers over the surface the hard nodules are at once felt. The paleness of the section is principally due to the presence of these nodules and a greatly increased amount of connective tissue.

The odour given off from the organ is peculiar, being somewhat like that of badly salted meat. After allowing the tongue to lie for a few hours, the cut surface of the healthy parts remained quite normal in appearance ; but the cut surface of the middle third was streaming with serum, which, running down, collected in the bottom of the incision. Subsequent microscopic examination confirmed the diagnosis.

Mr. Menzies tells me similar cases have been frequent in his practice. During the last few years four cases have occurred among the stock of Mr. Williams, in one of which the bones of the face became affected and greatly enlarged, and the teeth were loosened and dropped out.

With regard to microscopic examination in such cases, I find that for the simple identification of the fungus, no stain is necessary. My plan of procedure is as follows :—Put a piece of the organ in methylated spirits for a few days. Cut from it a slice of considerable length, and about one-eighth of an inch in thickness. Stretch the slice firmly over the point of the thumb. This causes numerous small nodules to project from its upper surface. Cut off one of the smallest of these nodules, put it in a saucerful of water a few minutes, transfer it to a slide, and put over it a cover-glass, which must be pressed firmly down so as to flatten the nodule out. Drop a few drops of liquor potassæ on the edge of the cover-glass, then put the specimen under the microscope and examine. It will be noticed during the next minute or so, as the

liquor potassæ gets gradually sucked underneath the cover-glass, that the specimen clears up with the exception of the fungus or fungi in the centre, which, owing to a covering of cellulose, resist the action of the agent.

OBSERVATIONS ON SOUNDNESS.

BY R. H. DYER, M.R.C.V.S., LIMERICK.

(*Continued from p.* 411, *vol. xxi.*)

SPLINT, or Splent, as it is occasionally named, is a disease of the metacarpal bones, frequently met with; it is difficult to find an animal without a deposit of bony matter somewhere near the carpal joint. Every person having the least pretension to a knowledge of horseflesh believes himself fully competent to give an opinion as to the soundness of a horse with Splint. There are many views published with reference to this disease, and various are the questions put to a veterinary surgeon when called upon to report on such cases. It is interesting to learn what our forefathers said about this affection. "Markham's Masterpiece" contains several articles upon it. I am afraid our present practice is so much at variance with that pursued in times gone by, that many of our failures must be attributed to a want of knowledge of the humours and the influence of the moon; that is, if our forefathers were more successful than ourselves. Bracken believed Splint derived its name from the fact of its serving to strengthen the parts as pieces of wood would strengthen a splice. Blaine says: "As the general nature of Splint is that of a conversion of what was before ligament into bone, so it is evident, in this point of view, that a splint can seldom, if ever, be wholly removed; but, from the process of absorption in the machine, in the latter periods of life, being greater than the deposit, so it happens that the *extra deposit* beyond the simple ossific deposit, and which extra deposit is that which constitutes the bulk of the splint, is removed in old horses, or, as grooms express it, 'they wear away.'" A splint placed at the lower end of the cannon bone is still more prejudicial than when situated higher up the leg. Youatt writes thus: "Splints, then, do not necessarily cause unsoundness, and may not lessen in the slightest degree the action or value of the horse. All depends upon their situation." Coming down nearer to our own time, we find a more extensive view is taken of the affection we are discussing. Percivall has half a score of pages upon the subject. He says: "The name of Splint, or Splent, derived from the Italian word *spinella*, a splint, would seem first to have been used to denote the bone in or upon which the disease,

so-called, is seated, and afterwards the disease itself. The eight small bones in our modern nomenclature called metacarpal and metatarsal, in their position along the sides of the cannon bones, or great metacarpal and metatarsal bones, have so much the aspect of splints (the old name for which is *splent*) or splinters off the shaft of the large bones to which they cling, that we can readily imagine how they came to be called splint or splent bones, and as readily understand how the appellation of the bone came to be transferred to the disease. The definition of a splint is simply this: that it is an exostosis, *i.e.*, a callous or osseous tumour, growing upon one, or contiguous to one, of the splint bones. Were the tumour not of such a nature, or, being of such nature, not so situated, we should not call it a splint." He has quoted from Solleysel, who gives five kinds of Splint—viz., "simple; the pegged or double splint; the third, which ascendeth to the knee; the fourth fusee; the last, osselet." The ordinary site of Splint is about the middle of the leg, rather nearer to the knee than to the fetlock. A splint upon or immediately under the knee-joint is an affair of complication and danger, compared to one in the ordinary situation, and so far we could and ought to make distinctions between splints; further than this, however, all specification appears groundless and useless. Blaine is of opinion that the lesser the splint the more serious is it to be considered. Here there is an evident clashing of opinions. "How happens it that this useful fibro-cartilage becomes transubstantiated into useless bone? The immediate or proximate cause we believe to be increased action, amounting in some instances to inflammation, set up in the vessels of the fibro-cartilage, whereby hypertrophy, or, in such an ossific diathesis as the horse species is known to possess, exostosis, is produced. Any violence or injury to bone, it is notorious enough, is, in horses especially, apt to be followed by exostosis, and if the hurt be to a joint, or in the vicinity of one, by anchylosis, partial or complete, as well; so prone is the economy of the horse to what medical men call ossific inflammation. The cause of Splint, now that its nature has been ascertained, will, on reflection, strike us to consist in anything that may occasion undue or sudden pressure upon the splint bone, whereby the cartilaginous union between it and the cannon bone is stretched or strained, and so has its capillary circulation increased in such a manner or measure that conversion into bone is the result, followed or not by exostosis, as the case may be. Over-action or over-weight at a tender age is the ordinary cause of this. In the anxiety there is to bring young horses into use, in the precocious practice of breaking, and racing, and hunting that exists, we cannot feel surprised at imperfect parts giving way or being reconstructed in a different manner from the original design. Nature is forced beyond her

powers, and, finding that the soft and elastic material placed for a certain wise purpose between the splint and cannon bones insufficient against weight and force, osseous material is substituted for it. Even before breaking or using the colt commences, however, the mischief may be perpetrated. A gallop, a jump, a gambol in the field or yard, may, even in the foal, occasion the throwing out of a splint. Again, a blow or other external injury may produce a splint, though this is comparatively a rare case. To whatsoever cause, however, it be referable, the fact is notorious enough that hardly any horse completes his fifth year without a splint, either latent or demonstrable; for, as we have before remarked, exostosis or tumour is not absolutely necessary to constitute Splint. Splint rarely produces lameness." I have quoted literally from Percivall's "Hippopathology," because the author so ably handled the subject; still, I must be permitted to say I don't agree with all he has written upon it. I don't think Splint has, up to the present, been properly and distinctly understood by horsemen generally. Mr. Percivall's definition of Splint is this: "That it is an exostosis, *i.e.*, a callous or osseous tumour, growing upon one, or contiguous to one, of the splint-bones. Were the tumour not of such a nature, or being of such nature, not so situated, we should not call it a splint."

We learn from this and other observations made by him, as well as some other authors, that a splint must be situated upon, or contiguous to one, of the small metacarpal bones. It will be necessary that we look rather closely into this matter, and endeavour to find out whether we have or have not exhausted the subject. In the first place, it will be well to learn if an exostosis, *not known* to be connected with the small metacarpal bone, should be designated a splint; for, without we settle this question, it will be difficult to deal with it. Reference has been made before to the absorption of the fibro-cartilaginous matter, and deposition of bone between the small and large metacarpi. Suppose the fibro-cartilaginous matter be absorbed, and its *own quantity of bone substituted*, and no more, I would ask if it is likely that many persons will detect Splint during the process of examination as to soundness? I hold a specimen in my hand, taken from a pony twenty-three years old, which consists of the carpal joint of the near leg, *i.e.*, the lower end of the radius, *all* the bones of the carpus with the three metacarpi; the scaphoid has a deposit of bony matter; the small (inner) and large metacarpal are so amalgamated that it would be impossible for any person to distinguish them in the living subject, or to state where the one commenced or the other terminated. The pony was put under treatment some years ago for Splint, and I believe the treatment had successfully banished the growth of bone called Splint. Having seen so much of this kind of thing, I may chal-

lenge the most sensitive hand to discover such a case in the living patient, as that which lies before me. I have been accustomed in practice to term all exostoses Splint, if found in the neighbourhood of the small metacarpal bones, whether on the inner or outer side of the leg. Sometimes I have (when they have been situated nearer to the anterior part of the large bone than to the posterior) named them nodes; which term I believed applicable. Mr. Percivall, however, was of opinion that the term node is *in*appropriate. If the term Splint be confined to the deposit of or substitution of bony matter between the small and large metacarpi, then it becomes necessary to give some other names to those excrescences so frequently met with upon the large bone. For my own part, I see no objection to the term Splint being employed in *all* cases which *may* be found to exist in the immediate neighbourhood of the small metacarpal bone. I don't see that we have need to manufacture difficulties about terms. That veterinary nomenclature is defective no one can doubt, and it may be worth one's while to set about effecting some improvement in that branch of our literature. With reference to the pathology of Splint, I think we have arrived at a satisfactory solution of the disease, so far as this is concerned; but with regard to the *effects* produced by Splint we are not so happy in our opinions. It has been said that Splint seldom produces either lameness or defective action. To this observation I cannot subscribe, as in many cases I have found both Splint and other bony growths about the metacarpal bones produce lameness, and defective action likewise. If we take into consideration the anatomy of the metacarpal bones, and then reflect upon the physiology of the same parts, we shall, I think, ascertain that both lameness and irregular or defective action are often the result of these deposits. I have several morbid specimens in my possession which display unmistakable evidences of inflammation having been centred in the bones themselves. In all these, lameness was, of course, apparent, and so bad in some of them, that I advised the animals be destroyed. I am of opinion that a deposit of bony matter cannot exist between the small and large metacarpi without interfering in *some degree* with the action of the limb. Take, for example, a splint situated midway down the small bone; all the regular courses have passed away, and a portion of the fibro-cartilaginous matter has been substituted by osseous matter, rendering it as firm as if a nail had been passed through it. Now, if the action of the inner small metacarpal be what a mechanic would be led to believe it is on examination—namely, a downward movement, and, perhaps, a little outward also—then a tie or bind midway must, of necessity, produce some change in the action of the limb. If to a board a small splinter of wood were fixed by means of a piece of india-rubber, and a weight placed

upon the upper part of the small splinter, in a precisely similar manner to what is performed upon the bones of the living horse, it will give a fair idea how small a liberty may be taken in nailing the small piece of wood to the larger, and what the result will be. I have every reason to believe that, as the situation of the ossific matter is changed, so will a change take place in the action of that part of the fore-leg of the horse. For many years I have paid especial attention to the action of horses having splints. As these deposits approach towards the carpus, the more they alter the action of the limb, and in some cases they produce an irregular or stilty movement of the whole leg. The shape of the ossific deposit will exercise much influence in producing lameness. I have always found that when these deposits are spiculated they produce much irritation of the periosteum, and will probably terminate in lameness. To the question, Does Splint constitute unsoundness? I will append the decision of Lord Chief Justice Tindal:—"A splint, like a bone spavin, is an excrescence or bony deposit on the leg of a horse, and the danger, in both cases, is the probability of their interfering with his action; the bone spavin by preventing the proper flexion of the joint, and the splint by pressing on the sinews of the leg. Lameness is thus produced by each; by a bone spavin nearly always, by a splint sometimes. It entirely depends on the situation of the bony tumour on the inside of the shank bone whether a splint is to be considered an unsoundness. If it is not in the neighbourhood of any joint, so as to interfere with its action, and if it does not press upon any ligament or tendon, it can be no cause of unsoundness, and although it is very often unsightly, it does not lessen the capabilities and value of the animal." In an action on the warranty of a horse "to be sound in wind and limb *at this time*," the breach of which was lameness, produced by a splint, it was given in evidence that a splint might or might not be the efficient cause of lameness, according to its position, size, and extent; that the splint in this instance was in a very bad situation, as it pressed upon one of the sinews of the leg, and was calculated to produce, when the horse was worked, inflammation of the sinew, and consequent lameness. Lord Chief Justice Tindal said: "It now appears that some splints cause lameness, and others do not, and that the consequences of a splint cannot be apparent at the time, like those of the loss of an eye, or any other blemish or defect visible to a common observer. We, therefore, think that by the terms of this written warranty the parties meant that this was not, at that time, a splint which would be the cause of future lameness, and that the jury have found that it was. We, therefore, think that the warranty was *broken*." I may with truth assert that ninety-nine horses out of every hundred examined by me have something

analogous to Splint situated in the vicinity of the small metacarpal bone, and the question invariably put is the following: "Do you think that splint will come against him?" These are the words generally made use of. Now, how are we to answer the question? By looking closely to the situation of the deposit, with a view to ascertain if it interferes with tendon or ligament, or if it is likely to do so at an early date or at any future time. This is the reply one would most likely receive. This reads very well upon paper, but it does not turn out an easy matter in practice. Many horses are examined, with large deposits of bone adhering to the small bone and extending inside of it; still they are not lame, although the ligament is continually rubbing against it. This can only be accounted for from the fact that all inflammatory action has passed away, and the parts have accommodated themselves to change of structure. Two cases were brought to me this day; one with a large exostosis immediately under the knee of the right leg on the *outer* side, which produced lameness for a considerable time. That patient has been discharged, cured of lameness, and is to be sold. The other case was that of a grey mare having small spiculi of bony matter both on the inner and outer sides of the right leg, about two inches below the knee. She is excessively lame, and has been so for some time. These cases are most troublesome. Is a horse sound with Splint? If we turn to the definition of soundness as laid down by the first lawyers of Great Britain, and which will be found in my first paper, it will there be learned that *sound* means *perfect;* if, therefore, a leg to be sound must be perfect, I think there will be much difficulty in our way in ascertaining the soundness or otherwise of an animal affected with Splint, more especially when we take into account the variety of forms under which these defects present themselves. If it were possible to state the *precise* situation and *extent* of the ossific deposit, we could in that case give a clearer and more definite answer to queries put to us in our examinations of splints. Morbid anatomy enables me to state that it is almost impossible, during the lifetime of the animal, to know the *precise* situation and extent, as well as course, of many splints. In cases of examinations as to soundness *prior* to purchase, these affairs are easily got rid of, should lameness take place subsequently; but if warranties are given in *similar cases*, and the subjects of those warranties fall lame within a reasonable time after being sold, I believe, in nine cases out of ten, a jury will find for the plaintiff.

A PAGE OF CAMELINE PATHOLOGY.

BY ALFRED J. HASLAM, M.R.C.V.S., A.V.D., EGYPT.

Scabies Cameli.

Taking into consideration the importance of land transport, especially where the camel is almost the sole beast of burden, the value of scientific facts concerning this somewhat neglected animal will be at once acknowledged.

The pursuit of science is ever revealing our ignorance; and, in doing so, so absorbing does the study become, that it is impossible to see, eat, or drink without pondering the "why" and "wherefore" of a most wonderful, yet regular and consistent nature. Finally, it becomes essential to peace of mind to detail that information which others have not had the chance of possessing, and which is for the assistance and ennobling of both man and beast.

Nomenclature.—Camel Itch, "Mange," Scabies, or "Garabb" (Arabic).

Definition.—An inflammatory, eruptive, and parasitic disease of the skin, accompanied by great local irritation and some degree of fever.

Semiology.—The local manifestations of this disease will be treated of in the morbid anatomy.

General uneasiness; impatient expression on face; wild appearance of eye, which is constantly moving; stamping feet on ground; whisking of tail; scratching by means of nails; biting parts within reach; rubbing against any object in reach, generally against another camel; rolling and rubbing on ground. At sunset the greatest uneasiness is manifested, due, I presume, to the acarus burrowing deeper to get warmer; often the camels break loose in their wild discomfort, rushing to the first object they see, and there take revenge on the persistent itch. In fact, Scabies seems about the only disease that excites them, or disturbs that sublimely simple stolid expression of a camel's face. The conclusive sign of Scabies is, however, the presence of the acarus Cameli (Haslam).

Seats of the disease.—The skin is attacked by the acarus in the following order: Groin, sheath, axillæ, inferior surface of abdomen, inferior surface of neck and throat, sides of neck and shoulders; between the toes, legs, face, sides of chest, and back—in fact, the attack is always where the skin is thinnest.

Occasionally the disease is so violent, that the acari are found in the muscular and subcutaneous tissue of the abdominal walls. I have also found nests of eggs in bloodless, dead muscular tissue. Even Peritonitis has frequently caused death in neglected cases of "Mange," in consequence of the great inflammation in the neighbourhood.

Prognosis.—If uncomplicated by another disease, the prognosis is always favourable.

The date of convalescence depends on the severity of the disease and treatment adopted.

In three or four weeks the severest cases should be convalescent, provided proper treatment can be adopted.

Results of Scabies.—Depreciation in value, usefulness for work impaired, loss of appetite, emaciation, fever, greatly increased thickness of dermis and epidermis (especially the latter; repeatedly have I taken epidermis from groin and lips 1¼ inch thick: and, moreover, this condition is not uncommon); also Elephantiasis, especially of legs and axillæ; Erythema, Dermatitis, irritative fever; death by diffuse Myositis, and Peritonitis, Septicæmia and Pyæmia.

Etiology.—Exciting causes, acarus Cameli (Haslam).

Predisposing Causes.—General debility; young and aged are much more liable than middle-aged.

Uncleanliness, want of grooming; undrained, hard, damp, clayey soil is very favourable to the progress of the disease.

Over-feeding, and food of a "heating" kind; insufficient exercise.

Contact and in close proximity with other camels; damp and foul atmosphere; temperature of 95° F to 120° F.

Treatment.—The treatment of a thousand or more scabied camels is no easy matter, especially with only native help.

Constant personal supervision is the *only* means by which to obtain your own orders efficiently performed.

All the principles of isolation and sanitation must be carried out.

1. Separate scabied from unscabied by at least 200 yards, and if possible one mile, always placing the former (diseased) so that the prevailing wind may blow upon the latter first.

2. Keep separate the attendants of each group, as far as possible.

3. Place the camels on DRY, SOFT sandy soil. This is of great assistance (camel will immediately thank you, by rolling in the sand); dryness alone will kill the acarus, as proved by experience. I beg to differ from those veterinarians who believe that by keeping the camels as near water, and on as damp ground as possible, they assist the cure of Scabies. Moisture is favourable to the development and propagation of this parasite.

The adult parasite is always found among the moistest of the epidermal cells.

Again, frequently have I seen open hock joints of scabied unexercised camels result from being tied with short head-ropes on *hard* ground. The poor beast *must* lie down to scratch himself; he is constantly shifting, and at the inf. post. ext. aspect of the hock, where it rests on the ground, the skin and subcutaneous

structures become worn and softened, pieces of stone get embedded, Synovitis, open joint, irritation, fever, and even death resulting. Imitate nature; do as nature does, she is the best guide in pathology. Hence, put camels on ground they are adapted for by nature.

4. Separate utensils; disinfect thoroughly, or destroy all sandals, head-collars, ropes, picket lines, etc., belonging to scabied camels, as soon as convalescent.

5. *Securing.*—In my opinion, each camel ought to be tied four or five yards from his neighbour (of course this is impossible on active service or pressing occasions); the head-collar rope ought to be so long as to allow the camel to stand in a *natural* position.

The reasons why camels *are* tied so close and short are, respectively, because the people in charge do not wish to place more picketing line down, and because their head-ropes are too short (which they ought not to be); so long as camels touch, the disease will spread from *bad* to moderate cases.

The theory that camels entangle, if tied with head-ropes long enough to enable their head to reach a natural position, means indolence, ignorance, and cruelty; it is exploded at the sight of more picketing line.

Frequently camps of camels are tied so low that their head can only reach the same height as their elbows; he tugs, bruises his chin, and soon wants a new collar. The version that the wind blows away much of the food if camels are not huddled up together, means laziness, as a rule. Again, the season of "must"—tying a thousand or more camels together ends in broken legs, bruises, ruptured humps, bites of all descriptions, and surgery to keep a veterinary surgeon busy for three months.

6. It facilitates matters greatly if the scabied camels are divided into groups of different degrees of severity. Different degrees of treatment can be the more effectually carried out.

7. Clip away all hair. Generally we find none, as it soon drops away after the disease is established.

8. Severe cases. If epidermis is much thickened, send camels to the sea-shore; cause them to lie in two-feet deep water for half an hour. This softens the semi-corneous growth. The camel invariably ducks himself, and he is a fine swimmer should he get out of depth. If not at the sea-coast, use fresh water, as is being done now on the banks of the Nile. This should be done when the day is warm, never in the evening.

9. Severe cases. *Carefully* scrape, *immediately* after the last operation. Bring camel out to shore; get him to lie down; secure and turn him on his back. Give the best native a piece of soft sandstone, or nearly smooth stone, to rub off all dandriff and scurf, a man pouring on water meanwhile, others holding the

camel, taking about twelve natives in all. Finally, wash clean with the water. *Avoid* drawing blood and increasing the inflammation by rough scraping and clumsiness. One scraping is always sufficient. Fresh water is quite as good as sea-water for scraping purposes.

10. Dress with sea-water. My experience only extends to Red Sea water as a dressing; but with that daily dressing (*i.e.*, "rubbed in") many cases have been cured. I cannot state if ordinary sea-water would be so effective. The Arabs use a solution of salt when not at the sea-coast; but it is likely that their strict isolation of scabied camels, continued exercise, and change of locality, are the means that prevent their camels ever getting so bad as Government camels. Take care to have the camels walked "in the sun" till thoroughly dry, after this operation.

11. *Dressing.*—Apply some "Mange" dressing twice a week. Any used for horse Scabies will suffice. A reliable sheep dip answers admirably. Stockholm tar, used by Arabs, is a splendid dressing, especially when diluted with fish oil. Carbolic dressings answer well. The most effectual mixture for this Scabies Cameli is, however, the following:—Stockholm tar, lbs. ii.; sulphur, lbs. j.; fish oil, lbs. ix.; carbolic acid (crude), oz. iv. Applied sparingly, but most thoroughly "*rubbed* in," is a splendid dressing, and applied every third day will effect a cure of the severest case in fourteen days. Here let me remark that it is extraordinary how soon Scabies dies away on "dressing," when the scurf is properly removed, the reason being that the breeding establishments of the unwelcome guests are removed.

12. *Exercise.*—Very important. At least, two hours' daily walking exercise, in addition to "watering" and "drawing" forage. They must not pass over ground used for exercising non-scabied camels.

13. *Feeding.*—Cooling diet and short rations; green food, if possible. I have tried the experiment of taking six scabied camels, equal in every respect, as far as possible to judge, and fed three on barley and straw; other three with beans (equal weight to the barley), and found that the barley appeared to increase the local irritation. The barley three were one week behind the others as regards the cure of the Scabies. I am of opinion that beans (equal weights) are more suitable than barley. They must have separate watering troughs, and at some distance—200 yards, at least—from healthy camels.

14. *Grooming.*—Each camel should be groomed daily with curry-comb and brush, the scurf removed. If this were done no "scraping" would be required. If combs are not obtainable, cause the camels to be brushed with brooms. "Half a brush is

better than none." The desert Arab is in advance of English wisdom when he grooms his camels, which he never fails to do.

Pathology and Morbid Anatomy.—Scabies is the most frequent disease of camels. It is very contagious, but varies greatly in severity, according to period of neglect and improper treatment.

The first local appearance is the formation of a papule about the size of a sixpence, then absence of hair. Very rarely do pustules appear, because the pruritus is so intense that *some* means is found to reach or rub the pimple, causing its rupture and exposure of dermis. The pimples never burst of their own accord unless protected from the efforts of the host to disestablish his guest.

These papulæ contain acari, but they are by no means *due* to the development of the eggs to young acari. They are merely an effort of nature to throw off a foreign body—*i.e.*, the burrowing acari producing the uncircumscribed inflammation.

The formation of irregular red patches of clotted blood, exposed dermis, and abrased surfaces result. Biting, scratching, or friction are the only means that will stay this troublesome pruritus to the satisfaction of the camel.

The epidermal cells are meanwhile multiplying, and the great hyperplasia results which is always seen in long-standing cases.

The appearance of the epidermis under an inch object-glass can be compared to nothing better than a translucent sponge as seen by the naked eye. But, in addition to this semi-horn, there is hyperplasia of the dermis, especially connective tissue (demonstrated by microscope and dissection).

Elephantiasis is frequent. Hence here is the reason why the second attack of Scabies is rarely so violent as the first, viz., the skin is thicker, tougher, and harder; there is less juice, and there are fewer softer cells to be had after the parasite has taken the trouble to burrow his way down.

The semi-horn is composed of epidermal cells, united by exuded plasma, and is frequently seen half-inch to one-inch thick. It is to this condition I have referred as necessary to scrape or remove before applying medicine. Often a camel is seen with skin like a rhinoceros hide, so wrinkled, cracked, and hard has it become. Occasionally deep ulcers and Psoriasis are results of these neglected cases. In from seven to ten days after the parasite has been brought in contact with the skin, the pimples have arisen; in seven days more they have been ruptured. From the seventeenth to the twenty-fourth day is seen the scratched and torn appearance. After the twenty-fourth day the visible epidermal accumulation occurs. But it must be remembered that these processes go on all together, on the same camel, with the spread of disease. Scabies *sometimes*, in its earlier stages *only*, is

accompanied by another parasite, *Pediculus Cameli* (Haslam), but oftener this latter parasite is not present. The habitats of the camel louse and camel acarus are quite apart, the former being on the hair and external layer of epidermis. The scabied skin is unfit for the existence of pediculi.

But frequently associated with Scabies is a parasite called the camel tick—*Melophagus Cameli* (Haslam)—very like the sheep tick. I hope, in a future paper, to state the connection between the propapation of Scabies through these ticks and other agents other than the acarus itself.

The Parasite.—Size $\frac{1}{64}$ to $\frac{1}{32}$ of an inch; visible to naked eye, like little white specks, seen in hundreds at the interior surface of a small piece of the epidermal growth. The female is slightly larger than the male.

Form.—A rough, broad oval.

Colours.—Translucent, like the epidermal scales.

Habitat.—Beneath epidermis, but not in dermis, unless in very severe cases indeed, where dermis is very thin; occasionally in the abdominal muscles.

The adult parasite is invariably found among the damp cells and exuded plasma. The young are found in the channels of the epidermis, where the cells are slightly moist; but *never* are they seen in the superficial layers of epidermis.

Food.—Liquor sanguinis and the rete malpighie cells. The older parasites, especially the females, seem to be able to thrive on liq. sanguinis, and even pure blood itself. The younger ones require less; but some moisture *is* required. Generally, liq. sanguinis is the food. The mouth of the parasite is most admirably adapted for its purpose, consisting of a long, mobile sucker, which is applied to the liquor or soft cells, and by which the juice is extracted and swallowed.

Mode of Life.—The adult acarus is provided with an armour of kitin. In addition, small spikes thrust over the whole of his exterior surface; but on the middle of the back these are much longer and stronger. The smaller spikes, or "hairs," are arranged in parallel rows, giving an appearance under a half-inch object-glass like the papillæ on palm of human hand to naked eye; also there are *long*, pointed hairs projecting from body and legs. The diagram will explain these. These long, stiff hairs are used as feelers, as the parasite passes along. Those of the fore-legs are especially used. After so feeling, the suckers of the legs are applied to the object, whether it be for food or removal. After a little "tugging," the object is removed. In this way the tunnels are made. There is no biting arrangement in these parasites. The curved spikes at end of the fore-legs are used for scratching epidermis also, and render very material assistance to the burrowing process.

The whole external structure seems to be adapted for feeling, burrowing, and power to resist pressure.

So far as I can make out (quarter-inch object-glass) there is no organ of vision: this is not needed, however, as his feelers are splendid guides. The tunnels communicate freely, are quite irregular, but end in the rete malpighie. Patient, continued, and repeated observation has been adopted in vain to see an acarus die soon after depositing her eggs—"after laying them, one after another, the first nearest the top of the channel, the last at the bottom," as I have been informed is the habit of the acarus equi. On the contrary, I have repeatedly seen her ladyship, after depositing her eggs, proceed "downstairs" to the soft cells, and resume her nutritious meal of plasma, and even blood itself.

Development.—The eggs are always found together in a nest or pouch of the tunnel.

These nests are always nearer the moist side of the epidermis than the external surface; a certain amount of moistness seems necessary (as dryness stays development, and ultimately the egg perishes). Never are the eggs found in the terminus of the channel. Eight days is about the period before the egg becomes the young parasite. The changes observed with a quarter-inch object-glass are divisions, formation of cellular mass, rugged edges, notching of edges, bulbs, first the fore-legs, then hind.

Generally, there are no more than five or six eggs in each nest.

Why so many scabied camels die.—1. From heart disease. It may astonish veterinarians who have seen camel practice when I state as a fact that nearly all scabied camels not sufficiently exercised (frequently the case at camel depôts), suffer from *mucoid degeneration* of the heart. It is a *most* frequent cause of death. Repeated and constant *post-mortem* examinations have convinced me of the above-mentioned fact. *Ante-mortem* clots, weak, flabby, degenerated hearts, with right auricle and ventricle changed into jelly, need only be looked for to be seen. *Then*, we understand, the loss of appetite, anæmia, exhaustion, asthenia, anasarca, swollen limbs, and the slow death these poor creatures undergo without even a moan.

Natives shirk exercising camels; they must be watched. Exercise is an absolute necessity to health—more to the camel than any animal I know of. He who has toiled for ages is in health strong and wiry, and his muscles far harder than he of whom "the muscles of his brawny arms are as strong as iron bands." *He* cannot stand pampering. I believe I am the first to point out this important fact, discovered by systematic examination of camels, *post-mortem*, on every possible occasion. I hope to have, at some future time, more to say on the subject of heart disease.

2. Irritation, in consequence of the severe inflammation, causes death.

3. Exhaustion, especially aged.

4. Septicæmia and Pyæmia.

5. Rupture of heart, on even moderate exercise, the effect of no exercise. Treat by little and increasing exercise, nutritious food, by no means "bulky" food, however.

6. Peritonitis, due to local inflammation, increased by friction, foreign bodies, etc.

7. Tetanus.

8. Lymphangitis, especially when highly fed; seen locally only, at first in region of groin and axillæ, where the inflammation is greatest near lymphatic glands.

9. Arteritis and Phlebitis, especially of hind-legs. Arteritis seen in femoral artery, in consequence of acute local inflammation, to some extent; but I feel satisfied that anæmia and poverty of blood may cause Arteritis, Phlebitis, and Lymphangitis in the camel.

Arabian Pathology.

"It is like Small-pox" (that is, infectious); "it comes from inside. The dressing and rubbing make pimples burst, so it comes out, and drops on the ground" (can't see it); "so me keep moving my gamel!" The natives repeatedly get Scabies from the camels, but the acari do not breed on the human skin. On my own arm I caused the disease to appear; without dressing, the disease passed away in nine or ten days; of course, the disease continues if more contact with scabied matter takes place. Horses very rarely get Scabies from camels. The acarus Cameli will *not* breed on equine skin. The disease passes away in eight to twelve days. I have tried repeatedly to *establish* camel Scabies on the horse, but never succeeded.

Results of Experiments.

Thorough ***dryness***, above 95° F., kills the adult acarus. Temp. over 120°, with complete dryness, destroys the egg.

Concentrated solution of salt (NaCl) kills the parasite; moisture favours development; Red Sea water kills the parasite. The effectiveness of a dressing depends on the power of destroying the acarus and eggs.

["The camel and dromedary are much affected with Scabies, from the presence of the *Sarcoptes dromedarii* (Vallon). It more especially appears in the spring, and shows itself at the flank, sides of the body, and the neck and tail. The animals are continually rubbing themselves and rolling; they become dull and lose their appetite; vesicles appear on the skin, and these are soon

succeeded by a layer of scales. . . . The Arabs tar their camels in order to preserve them from or cure them of the disease. The parasite is transmissible to mankind, though it does not appear to propagate in its new home."—"Veterinary Sanitary Science and Police," Vol. II., p. 461. "The Itch, and its best remedy, sulphur, abound from one end of Arabia to the other; but the unskilfulness of the Arabs themselves in the application of the mineral often thwarts its effect, or leaves it only partial. This unseemly affection is common among camels, and from them is frequently communicated to men."—Palgrave's "Eastern and Central Arabia," Vol. II., p. 34.]

Editorial.

THE EXTINCTION OF RABIES.

The recent alarming increase in the number of cases of Rabies among dogs in London, and the fact that nearly thirty people have died from Hydrophobia within the London area since the commencement of last year, has once more drawn public attention to the existence of this dreadful malady among us, and the serious results that ensue from neglecting the necessary precautionary measures. But, unfortunately, as has so often been the case with similar animal diseases in this country, the measures best adapted for contending with this scourge do not exist, and those which local authorities can put in force when it pleases them are of little value when applied. In London a Police Order has been issued that all dogs out of doors are to wear a muzzle, or be led, and all dogs straying, or unmuzzled, are to be seized. This will effect some good in London, but it will not benefit the districts beyond. Rabid dogs do not respect police boundaries, and when we know that one of the characteristics of the disorder is an uncontrollable impulse to escape from home and restraint, and wander for miles, snapping at and inoculating every living creature they may chance to meet, it will be at once apparent that the country around London is in no way protected, and that the disease may exist, and rabid dogs abound, without let or hindrance, a short distance outside the London police limits. This is the way that, for so many years, we tried to combat destructive diseases in other animals, and of course failed. Rabies is not confined to London, nor to any particular part of England, and if it is to be extinguished, effective measures must be applied in a more or less general and decided manner over a wide extent of country, and for a long period. These measures are well known, and have been insisted upon for adoption frequently since they were published fifteen years ago. It is to be hoped that when Parliament meets, the Government, or some influential member, will introduce a Bill for the total suppression of Rabies. Accepting it as a fact that the maintenance of the disease is solely due to its contagious properties, and that it never originates spontaneously, there is no reason whatever why it should not be

stamped out within a given time. Being extended only by inoculation, it ought to be very much more easily got rid of than Foot-and-mouth Disease, or Cattle Plague. Glanders, like Rabies, never arises spontaneously, and it has been by recognising this fact, and acting upon it, that this equine scourge, which used to decimate the horses of the British army, is now unknown among them except when they come in contact with the glandered horses of civilians outside the barrack walls. In dealing with contagious diseases this country is very torpid and indifferent. It would almost appear as if we thought them indispensable to our welfare.

THE CASTRATION OF CRYPTORCHID HORSES (SPITZ-HENGSTEN).*

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I WILL, with your permission, introduce this subject to your readers by saying that the following is based partly upon the Danish literature for the last thirty years, partly from communications received from my colleagues, and principally from personal observation and experience. We have only consulted one foreign source of information, *i.e.*, Hering's short description of the operation in his "Handbuch der Thierarztlichen Operations lehre," third edition, 1879, in which he finishes by saying, "It appears, however, more convenient to use the animal uncastrated."

This conclusion is, however, unsatisfactory to the Danish farmer, because he does not like using stallions; they are too unruly and unmanageable for the farmer to govern. And since cryptorchids are usually more unmanageable than normal stallions, and even savage, they frequently change from one owner to another, each time becoming of less value, and getting into the hands of lower-class men. Many of these animals find their way into the country districts, and are operated upon by the veterinary surgeons of the district.

The castration of cryptorchids in Denmark has long been performed by itinerant castrators, who, from practice, have become expert, and are tolerably successful operators. They frequently insure the animal, in case of death from the operation, by receiving a higher fee when the horse has recovered. However, this guarantee is of little value, because the castrators are poor, and come from another district to operate; they, therefore, usually expect their fees directly the operation is finished, in order that they may return home. It not unfrequently happens that the animal appears to be a stallion after the operation has been performed, although the operation may have been performed conscientiously.

When Professor Stockfleth brought this subject before the Veterinary Society in 1856, only a few of those present had performed the operation, some by the flank, and others through the inguinal canal. During the following year Stockfleth bought a cryptorchid horse, for experiment at the Copenhagen Veterinary School, and had one of the experienced travelling castrators to perform the operation.

It was long after this, however, viz., 1866, before it became the general practice of veterinary surgeons to operate on these animals. In that year Stockfleth published a treatise on the "Anatomical Relations of Cryptorchids." He pointed out that the position of the hidden testicle may be very different,

* Translated from the *Deutsche Zeitschrift fur Thiermedicin und Vergleichende Pathologie*, by G. A. Banham, F.R.C.V.S.

so that finding it in the abdominal cavity may be very difficult, and sometimes the whole hand must be passed into the cavity before the gland can be found. The posterior part of the cord has always the same position in all animals, therefore this is easier found. Every veterinary surgeon can see the position of this in the dead subject.

This explanation removed a great difficulty in many men's minds, who feared they would not be able to find the gland. Since this, many practitioners have undertaken the operation ; so that at the present time most of such operations are performed by the qualified practitioner (some of whom make it a special study), and the itinerant castrators are fast disappearing.

In order that our readers may follow us more easily, we will just sketch the anatomical relations, as given by Professor Stockfleth in the second volume of his "Handbook of Veterinary Surgery," page 407 (original Danish edition), which is both plain and concise :—

"Near the place where the limb comes in contact with the body, the abdominal wall is pierced by the inguinal canal (*canalis inguinalis*), which lies between the abdominal muscles and the ligament (*ligamentum Poupartii, s. inguinalis*) formed by them. This ligament divides into two parts, a limb portion and a pubic portion. The limb portion is the thinnest, and unites with the sheath of the muscles of the limb; the pubic-bone portion, on the other hand, forms a strong tendon, which becomes attached to the anterior border of the pubic bone. The inguinal canal serves for the passage of the testicle and spermatic cord, etc., into the scrotum during fœtal life. Both are covered by the general serous tunic (*tunica vaginalis communis*). This canal is not merely a straight hole bored through the abdominal wall, but it is an oblique canal, 8-10 cm. long. The internal opening into the abdominal cavity (*annulus abdominalis, s. inguinalis*), or internal abdominal ring, is smaller than the external, and slantingly situated, about 15 cm. from the middle line (*linea alba*). The peritoneum passes through it to the scrotum as a special membrane (*tunica vaginalis propria*), covering, on the one side, the testicle and its appendages, on the other in apposition with the common lining of the scrotum (*tunica vagin. comm.*). The canal is flattened from above to below, filled by loose connective tissue, and passes in a direction from before, backwards, and inwards towards the middle line of the body. The external opening (external abdominal ring) is a cleft about 10-12 cm. long, passing obliquely forwards and outwards in the strong Poupart ligament and the yellow abdominal tissue (*fascia superficialis*). It commences about 4 cm. in front of the border of the pubic bone, and the same distance from the linea alba, but is much nearer the latter than it is to the internal inguinal ring. When the horse stands normally on its legs, the inguinal canal forms an almost closed slit ; but when the limb is held backwards and outwards, or when the animal is cast and fixed so that the limb is held from the body, then the inguinal canal is circular-shaped (cylindrical), because the limb portion of the Poupart ligament is drawn outwards and backwards. This is the reason why an inguinal hernia may take place during the operation of castrating a stallion."

In a cryptorchid that Stockfleth bought for *post-mortem* purposes, the left internal inguinal ring was normal, and the spermatic cord passed through it in the usual way outwards. The left vas deferens passed from the internal ring over the round ligament and the ureter, posteriorly over the wall of the bladder, through the portion of peritoneum (Douglas' fold) under the prostate gland, to the urethral canal. The right testicle was in the abdominal cavity, hanging, with its vessels and vas deferens, in a fold of peritoneum about 8 cm. broad, from the superior wall of the abdomen. Inferiorly, it was united to the right inguinal ring by a strong fold of membrane (a kind of gubernaculum). The vas deferens was tolerably long and tortuous, and

had the same form and course as that on the other side. On account of its length and position, it could have easily been drawn through an opening in the inferior wall of the abdomen (operation wound). On the other hand, the vessels were so short, that it would have been difficult to draw out the gland sufficiently to place a clam on them, without fear of rupturing them.

In another cryptorchid which we made a *post-mortem* upon, we found one of the testicles alongside of the small psoas muscle, hanging in a duplicature of peritoneum, which formed a kind of ligament about 10 cm. broad. The vessels and the vas deferens were so long, however, that they could have been easily reached through an opening in the floor of the abdomen, although the peritoneal duplicature must have been torn before the gland could have been obtained. The main point to notice is, that the vas deferens was normally situated.

In some cases we have noticed that the internal inguinal ring is smaller on the side where the testicle remains in the abdominal cavity, than it is on the other, whereas in other cases no difference could be detected.

When is a stallion a cryptorchid, and when is he not?

Hering writes* :—"The testicles often remain in the abdomen or inguinal ring of horses and other animals. Stallions with only one or neither of the testicles visible in the scrotum are termed cryptorchids." This definition is not recognised by the Danish veterinarians. They understand a cryptorchid to be a horse which has one or both testicles situated in the *abdominal cavity*, and whose walls must be broken through in order to reach the gland. When the testicles are found in the inguinal canal, the term "*false cryptorchids*" (*Falshe Spitzhengste*) is used. In these cases it is not necessary to pierce through the wall of the abdomen in order to reach the testicle; they can always be reached and withdrawn (although sometimes with difficulty) through the inguinal canal and external ring; and there is no more danger in operating upon such animals (false "rigs") than upon normal stallions; whereas the castration of true cryptorchids is always a serious operation.

It is often very difficult to decide whether the testicle is situated in the abdomen or the inguinal canal. Since it is most important that a decision should be attained before the operation is undertaken, we may well ask ourselves the following question:—

(*b*) *Is it possible to diagnose, before commencing to operate, whether a stallion is a cryptorchid or not?*

In true cryptorchids the testicle which has descended into the scrotum is generally large, and hangs low down; whereas, as far as my experience goes, that of false cryptorchids—where the testicle is in the inguinal canal—is of a normal size. When the testicle is situated in the lower part of the inguinal canal or external ring, it can be detected by carefully manipulating the part whilst the horse is standing. If it is situated high up in the canal, near the internal ring, it is not possible to feel it by external manipulation, especially in coarse-bred and fat horses, because of the layers of fat and the several lymph-glands in the neighbourhood. In such cases an examination through the intestine, per rectum, may assist in arriving at a proper diagnosis. If the hind limb of the respective side is pulled slightly away from the body by an assistant, and the hand of the operator allowed to manipulate the external ring, whilst his other hand is at the internal ring, through the bowel, he can be tolerably certain whether a testicle is in the canal or not. We would, however, impress upon our readers not to test the animal in this way when it is cast just before operating; because the hands become so dirty (infected),

* Loc. cit., p. 250.

that it is impossible to properly clean and disinfect them before commencing to operate.

There is no difficulty in detecting the testicle through the intestine; but there is in finding it. The gland is generally to be found lying in the neighbourhood of the internal inguinal ring, or near the anterior border of the pubis; but we have never yet met with it in the lumbar region. J. S. Petersen has castrated a large number of cryptorchids, and he says that he has never yet found the hidden testicle in the lumbar region. In two cases a practical assistant has passed his arm into the intestine, found the gland, and pushed it to the operation wound; so that the operator could secure it with his hand through the inguinal canal. On the other hand, we have, in company with our colleagues, sought in vain for the gland, although a later operation showed that the animal was a true cryptorchid.

It not unfrequently happens that an animal is brought to us having the appearance and manner of a stallion, although there are two scars on the scrotum. In these cases we must be careful to make out whether the animal is a "rig" or not, and, if so, on which side of the body the gland lies —if only one is present—in order to avoid operating on the wrong side.

It may be seen, from the following case, related by C. R. Jensen, how difficult it sometimes is to arrive at a correct diagnosis :—

"In the early part of the summer, a ticklish four-year-old 'rig' was brought. The owner wished it to be castrated, as it was impossible to manage it. According to his report, the animal had the left testicle removed when it was two years old. As the animal had come some distance, and was very poor in condition, I resolved to operate at once. However, after the animal had been cast and fixed, I found scars on both sides of the scrotum, and it was impossible for me to say which testicle had been removed. On neither side could any trace of the spermatic cord be felt, nor could the testicle be found per rectum. The owner's report could not be relied upon with certainty, for I suspected that the right testicle, and not the left, as he said, had been removed, because on that side I could detect a slight thickening, which I believed to be the end of the right cord. Therefore, I allowed the horse to get up again, and bade the owner inquire of the veterinary surgeon who operated on the horse whether he remembered which testicle he removed, and why scars were on both sides. Some few days after, I received an answer from the veterinarian, who said he could not with certainty remember which gland he had removed, but he thought it was the left; and he, in conjunction with another veterinary surgeon, had failed to obtain the right one. This bothered me, because I did not wish to operate on the wrong side. However, a few days after, H. C. Jensen and myself made another very careful examination, both per rectum and externally, without being able to find the testicle, although we could detect the slight thickening on the right side. We therefore came to the conclusion that we had better operate on the left side, which we did, and found the rudimentary testicle tolerably easily, and the horse soon recovered."

Sometimes the epididymis is found in the inguinal canal, whilst the testicle itself is in the abdominal cavity. Such a case came under my notice several years ago. The subject was a strong five-year-old "rig," in good condition. The left testicle had been removed some years ago. The remaining right one could not be detected by either external or internal manipulation whilst the animal was standing. When cast, however, a small, slight, movable enlargement could be felt. An opening was made, and a rudimentary gland was removed, and the animal soon recovered. After a time, the owner complained that the animal still showed signs of a stallion, which evidence was borne out by a colleague who knew the horse. Therefore it was clear that some mistake or oversight had been made, and that we had removed the

epididymis only, and not the gland itself. I was more impressed with the truth of this after I received the following communication from C. R. Jensen :—

"A poor, half-starved young Russian horse came to this country, and, after three or four months, it began to improve in its condition, when it became unmanageable, which led us to examine it. I found a scar in the centre of the scrotum, but as I could feel the end of the left spermatic cord, it was clear that the left testicle had been removed. When the animal was cast, I could feel a small, movable body, about the size of a walnut, on the right side. At first I thought it was a swollen lymph-gland, but I made up my mind to pass my hand into the abdominal cavity. In doing so, I found this small body was covered by a serous membrane (*tunica vag. propria*), which on the gland itself was of a natural thickness, but above this it was very much thickened, and formed a fine cord, which passed upwards through the inguinal canal to the internal inguinal ring. I cut this through as high up as I could, and then pressed my hand through the small internal ring into the abdominal cavity. Immediately behind the wall of the abdomen I found a tolerably large testicle, which I drew outwards and removed. The horse recovered in about three weeks."

C. R. Jensen further remarks that he has often found the epididymis from 10—16 cm. from the gland (testicle) itself; and he is quite sure that this position of the epididymis often increases the difficulty of drawing the testicle through the operation wound. Perhaps it is to these cases that the term "short spermatic cord" (*Kurzen Samenstrang*) is applied.

Dr. Eichbaum* made his observation on a foal fourteen days old, which gave a clear idea of the descending of the testicle into the scrotum (*descensus testiculorum*), and at the same time explains the origin of the last-mentioned abnormality. He found one of the foal's testicles in the scrotum, and the gubernaculum almost gone. The other testicle, on the other hand, was situated in the abdominal cavity, near the internal ring, hanging in a duplicature of the peritoneum, which had its origin in the lumbar region, near the M. psoas magnus. Much the same has been observed by Stockfleth and myself. The tail of the epididymis and a portion of the vas deferens were in the inguinal canal, in the already-formed tunica vaginalis communis. In foals having a small internal inguinal ring, the gland might remain in the position just mentioned for an unlimited time, as has been pointed out by C. R. Jensen and myself. It is also self-evident that, under these conditions, it is difficult to draw down the testicle through an opening on the side of the inguinal canal.

From the foregoing, we see that it is sometimes difficult to diagnose whether an animal is a cryptorchid or not. Yet it is of great importance, before the operation of cutting into the abdominal cavity is commenced, to know whether the testicle lies in the cavity or not. I was especially struck with the importance of this from seeing the operation performed by two very expert colleagues, years ago. They carefully examined their subject, both externally and per rectum, and as they could not feel the organ, they concluded it was situated in the abdominal cavity. They made their opening immediately in front of the pubic bone, cutting through skin, muscle, and peritoneum, so that, when the blood ceased, they had a straight and regular cannular wound. By the two forefingers being passed into the abdominal cavity, they soon found the spermatic cord, and this, with the tail of the epididymis, was drawn out; but it was impossible to bring the testicle forward also. Finally, two fingers were passed obliquely from the wound into the inguinal canal, and there the testicle was found. As this was being brought forward, the

* *Revue fur Thierheilkunde*, vi. Bd., S. i.

epididymis was drawn back into the abdominal cavity, and only came forward after the testicle itself. The horse recovered. I do not know exactly how Stockfleth operated, but he advises the operator to examine the inguinal canal after he has made his opening through the skin, and before he opens the abdominal wall; so that if the testicle is in the canal, it may not be overlooked, and the abdominal cavity opened for nothing. If this method is followed, it is evident that the operation wound, instead of being regular and straight through the tissues, as it should be, will be irregular, and the tissues separated from each other, forming pockets for the pus to burrow in and between.

At what age, and in what condition, ought the animal to be in when the operation is performed, and which is the best time of the year to operate?

All the Danish operators prefer to operate when the animal is between two and four years old. The yearling has not strength enough to stand against such a dangerous operation, and it is more dangerous to the patient. H. C. Jensen has tried to operate on two-year olds, but did not succeed in finding the testicle. The following year, however, the operation was successfully performed. The testicle is usually lodged in the inguinal canal in one and two-year-olds, and the reason why it is not found is because the gland is so small or that the animal is too fat. In such cases it is a good practice to put the animal to work, to reduce its flesh; also, to remove the already descended testicle, which causes the other to grow and descend into the scrotum quicker than it otherwise would. If, however, the testicle is in the abdominal cavity at this age, it never, as far as I know, gets into the canal or scrotum. J. S. Petersen also says that he has examined many young animals, and found the testicle in the abdominal cavity, and in these cases it never descends, whether the other testicle be removed or not.

On the other hand, some have said they have known cryptorchids which had both testicles down as foals; and J. S. Petersen knew one case where the testicle descended into the inguinal canal of a foal, and then ascended into the abdominal cavity again.

Although it is not proved by statistics, yet it is generally acknowledged that young horses are easier operated upon than old ones. The abdominal walls of the latter are firmer, and more difficult to bore through than the former; yet, other things being equal, no other difference is to be observed. The oldest animal I have ever operated upon was nine years old; yet it was one of the easiest cases I have ever operated upon. Another, operated upon at the same time, was a six-year-old; this was very dull for a few days, but soon recovered.

Before the operation is performed, it is all important that the patient should be perfectly healthy, and not too fat. The poorer the better, so long as the animal is not weak and its tissues soft. Fat in the inguinal region makes the operation more difficult, inasmuch as the abdominal walls are thicker through, and the fingers cannot be passed into the cavity so easily or so far. A fatty mesentery also makes it more difficult to find the testicle or cord. It is seldom necessary to feed a healthy horse up before the operation, on account of its being too poor. Those in the poorest condition do the best.

Stockfleth has long said that cryptorchids are best operated upon between the months of April and October. At other times of the year the weather is too cold, although animals rarely take cold after the operation. The weather which is most dangerous is cold accompanied by wind. C. R. Jensen says that "good results can only be expected in summer time, partly because at other times the cold winds prevail, and partly because animals are usually more healthy in summer than at other seasons."

My operations have usually fallen in the summer months—viz., between April and September—therefore I have had no experience of the effects of cold on such patients, but I believe that summer is the best season to operate in, upon the ground that C. R. Jensen mentions. Other colleagues only operate during summer, but J. S. Petersen often operates in winter, and says that cold need not be feared.

(To be continued.)

AIR AND ITS RELATIONS TO HEALTH AND DISEASE.*

BY FRED SMITH, M.R.C.V.S., ARMY VETERINARY SURGEON.

COMPOSITION OF THE ATMOSPHERE.

THE air may, generally speaking, be stated to be a mixture of one-fifth oxygen and four-fifths nitrogen, in one hundred parts. The exact composition of pure air has been variously stated, but the following may be accepted on the authority of Dr. Angus Smith :—

Nitrogen.....	78·98
Oxygen	20·99
Carbonic Acid.....	0·03
	100·00

In addition to these, air is found to contain a certain amount of watery vapour, which varies with the temperature, traces of ammonia, and a variable quantity of ozone, organic matter, and mineral substances.

Oxygen.—A pure air will contain 20·99 per cent., an average air 20·96 per cent., whilst very bad air begins at 20·6 per cent. Under contaminating influences, the oxygen diminishes ; the air from cow-houses and stables, taken after the buildings had been open in the morning, gave from 20·70 per cent. to 20·82 per cent. (Angus Smith). A close stable in the Ecole Militaire gave 20·39 per cent., and the same stable, ventilated by casements, 20·71 per cent. (Leblanc).

Ozone is only another form of oxygen ; it exists in very minute quantities, and is supposed to be generated by electrical conditions of the atmosphere and by aromatic plants and flowers (Mentegazza). It is seldom found in the air of inhabited rooms (Wolffhügel), is most abundant in open fields and places of great atmospheric moisture (Ebermeyer). Ozone has an exceedingly irritating effect on the respiratory passages, eyes and nose, and an attempt has been made to connect outbreaks of Influenza with its presence in the air. Owing to its great oxidising properties much influence has been attributed to it in checking epidemics and epizoötics, but evidence is wanting.

Carbonic Acid.—This is a constituent of the atmosphere, and as such is principally derived from the ground air. Its normal proportion is about ·04 per cent. Pettenkofer gives ·05 per cent. for the air of Munich. My own analyses show that the amount of CO_2 in the air varies considerably, not only from day to day, but from hour to hour ; on succeeding days I found the following quantities : ·062, ·068, ·047, ·053, and ·032 per cent. Air taken from the same place within a few minutes of each other, yielded ·041, ·038, and ·032 per cent. The air close to the ground contains more CO_2 than that some feet above it. I have found ·065 per cent. on the ground, and ·053 per cent. seven feet above it.

In spite of the enormous amount of CO_2 passed daily into the atmosphere (computed by Dr. de Chaumont for London alone to be 822,000,000 cubic feet daily, and by Dr. Smith to be, for Manchester, 15,066 tons daily), yet,

* A paper read before the Central Veterinary Medical Society.

owing to the process of diffusion, the amounts in the air of big towns is very little larger than in that of country places. Variations in the CO_2 of the air occur under certain circumstances. Mene found that it is lowest in winter, increases during the spring, falls again during summer, rises during the autumn, and obtains its maximum in October. On land it is greater by night than by day; the reverse holds at sea. It increases with snow, but diminishes, as might be expected, with rain. The greatest variation in quantity is attributed by Fodor to the ground air. An increase in the amount of CO_2 in the air of buildings is indicative of a reduction of oxygen, *and an increase of organic matter.* The amount of CO_2 present is therefore used as an index of the purity of the air, as we shall have later to show.

Nitrogen is incapable of sustaining life, and its function in the air is to dilute the oxygen. During electrical conditions of the atmosphere, a portion may be converted into nitric acid, a substance often found in rain-water. There are no changes known to occur in it.

Watery Vapour.—The amount of this is constantly varying; its changes have no relation to the different proportions of gases which may be present—it is quite independent of them. The variations in moisture are due to the temperature; more vapour is contained in air when the temperature is high than when it is low.

Impurities in the Air.

It is not surprising to find that the impurities found in the air are numerous, and derived from many sources. The importance of these impurities to us is very great, when we consider that, in whatever form they exist, they obtain a direct entry into the animal's body by means of the respiratory passage. Absorption from the mucous membrane of the lungs is particularly rapid, especially from substances in solution. The administration of medicines by the trachea, which has lately been strongly advocated, is based on this knowledge of bronchial absorption. Certain provisions exist in nature to prevent an accumulation of the enormous amount of impurities poured into the air. The chief of them is the well-known law of diffusion, whereby rapid dilution of the particles occurs. The vegetable kingdom plays an important part, by assimilating as food certain impurities in the air and replacing them, as in the case of oxygen, by material of life-giving properties; the natural oxygen of the air assists in the purifying process by destroying organic compounds and breaking them up into simpler bodies. The elements perform their share in the process of disintegration and repair; the air is washed by means of rain, and impurities carried down by this means to the earth, where they are assimilated by plants, and thus destroyed. All these provisions of nature tend to keep the air in that condition of healthy balance which is so essential to animal life.

The lungs of a horse will contain nearly one and a half cubic feet of air, and at each inspiration 130 cubic inches are drawn through the trachea, and the surface of the lungs to which this amount of air is exposed is calculated to be equal to 289 square feet. Air, then, containing impurities, particularly gaseous, is exposed to an absorbent within the body equal to five and a half times the surface of the skin.

Air is rendered impure by the products of respiration, and the decomposition of excreta; by the influence of large manufacturing towns and thickly populated cities; the air becoming vitiated by the products of combustion and the gases of trades, and by disease poisons given off from the bodies of sick men and animals. For convenience of description, therefore, the impurities of air are divided into organic, inorganic, and gaseous.

Organic impurities, in small proportions, always exist in the air of places occupied by animals; and in order to distinguish between the amounts and

their effects, they have been divided into neutral, putrid, and organised. Such a division is quite an arbitrary one, and may be open to objection; it is, however, a convenient arrangement for purposes of description.

Organic impurities exist in the form of solid particles, accompanied in many cases by gases which are given off from them. These particles, such as bacteria, vibriones, spores of fungi, are only of microscopic dimensions; others, such as vegetable fibre, epithelial cells, etc., are much larger. The organic matter in the air can be collected; that from the human breath has been condensed and examined. Ehrenberg has discovered 200 forms of organisms in air thus collected.

We know very little about these living particles of matter found in the air; they are largely met with in prisons, hospitals, houses, and stables, wherever the air is impure, and in a lesser degree they exist everywhere. We can filter them from the air, and can also destroy them by the action of chemical agents. On this process of filtration and disinfection of organic particles is founded the basis of antiseptic surgery.

Amongst these organised particles are also others, which form a distinctive group. They are characterised as being the *materies morbi*, or disease-producing bacteria; such, for instance, are the poisons of Pleuro-pneumonia, Tuberculosis, Sheep-pox, Cattle Plague, Influenza, and, probably, Anthrax and Glanders. That particles of disease-producing matter can be conveyed by the air is well known, and the following experiment, made by Kuchenmeister is quite conclusive: A sheep was made to breathe, during one hour, air which was made to traverse a shirt worn by a Small-pox patient for twelve hours; in five days the animal was affected with Variola.*

Epithelial scales and pus cells have been found in the air of hospitals, and in those devoted to the treatment of skin diseases actual disease-producing fungi have been found. The air of towns contains organic matter in a state of fine division; vegetable fibre derived from manure is frequent in the air of streets; pollen from flowers, feathers, epidermis, hairs, scales, fungi, are commonly found.

Solid bodies in the air, both of organic and inorganic origin, have been observed for years. In examinations made by Dr. de Chaumont, epithelium, hair, and various fibres, sand, soot, and crystalline substances, sporangia of fungi, and monads were found. In the accident ward of St. Mary's Hospital he found pus cells in the air near some beds where repeated cases of Erysipelas had occurred. Dr. Veale found at Netley, under similar conditions, the air loaded with fungi. I have found in the air of stables, hairs, epithelial cells, vegetable fibre, sand, spores of fungi, and in one case an acarus. Mr. Crookes and Dr. A. Smith both found large quantities of organic solid matter in the air surrounding animals affected with Cattle Plague. In passing air from cow-houses through a solution of permanganate of potassium, he observed that the appearance produced in the water could not be caused by pure air, unless from fifty to one hundred times the amount was used. With regard to the organic particles found in sheds where diseased animals were kept, he says: "I came to the conclusion that the air of cow-houses and stables is to be recognised as containing more particles than the air of the street in which my laboratory is, and of the room in which I sit. There is found in reality a considerable amount of *débris*, with hairs or fine fibres." Similar indications were found in a cow-house with healthy cows, so that Dr. Smith did not pretend to have discovered the poison of Cattle Plague; but that when particles exist in the air surrounding diseased animals, it is only rational to believe that in the case of infectious diseases they may be the means of conveying the specific poison.

Various forms of bacteria have been detected in the air; putrefactive

* "Veterinary Sanitary Science and Police," G. Fleming, LL.D., F.R.C.V.S.

bacteria are always present ; those of Anthrax, Tuberculosis, and Glanders are probably present under certain conditions, particularly that of Tuberculosis. Anthrax spores present in the air of rooms where wool-sorting is carried out, is well known to produce the disease by inhalation. Slight air currents probably prevent floating bacteria from settling down ; the condensed watery vapour which surrounds them tends to maintain their buoyancy ; friction also retards their fall (Ziegler).*

Wernich has shown that air currents may sweep off bacteria from moist fungus masses adhering to the surface of solid bodies.† Fodor, according to Parkes, found at Buda Pesth bacteria in 522 out of 646 observations. Bacteria and fungi seemed to alternate in seasons and years ; the former were more common in spring, the latter in autumn. Klebs has collected the bacillus of malaria from the air over the Italian marshes.

The organic matter found in air vitiated by respiration and transpiration is made up of cast-off epithelium from the mouth, air passages, and skin ; organic vapours from the lungs and skin whose constitution is improperly known ; fæces in fine division, and vapours derived from the decomposition of materials from the intestinal and urinary passages. This organic matter is accompanied by carbonic acid gas and watery vapour. Regarding the latter, the cutaneous and pulmonary transpiration from a horse, whilst in the stable, is equal to about two gallons of water in twenty-four hours ; for the ox it is about one and a quarter gallons. The vapour from the skin contains organic matter and CO_2, the former exists in larger amounts than in that of man.

It is this organic matter found in the air of buildings which obtains such an important place in the hygiene of air. We have previously mentioned that it has been condensed and collected from the air ; it may also be drawn through distilled water by means of an aspirator, and its presence detected on analysis. Angus Smith found that condensed from the air to be a thick oily liquid, smelling of perspiration and capable of rapid decomposition. This air was taken from a crowded room. If organic matter derived from the skin and lungs of human beings possesses such objectionable properties, what must the organic matter from the habitations of animals possess, when we consider that not only are the skin and lungs acting, but that we have deposited in the place where they live the discharges from the bowels and kidneys?

When organic matter is produced, it rapidly adheres to the walls, woodwork, etc., and there, parting with its water, it becomes fixed, forming a greasy coating.

This is the reason why the peculiar penetrating odour of organic matter, in badly ventilated stables, is so difficult to remove, even with free perflation of air ; it hangs to woodwork, walls, and ceilings, and is readily experienced on entering a building of this description, or the decks of transport ships.

This organic substance, owing to the moisture in the air, is constantly undergoing change, giving out carbonic acid, ammonia, and sulphuretted hydrogen—the blackening of the paint of such habitations is due to the latter gas. From observations made by Dr. de Chaumont and others, it has been shown that *the organic matter in the air of buildings is in proportion to the* CO_2 *of respiration.* This is a most important point, for it affords us a ready index to the purity of the air by determining the amount of CO_2 present in it. It must be distinctly repeated, as we shall have later on again to note, that it is not the actual presence of a large amount of CO_2 in air which is to be dreaded, but the certain indication which this affords of the large amount of organic matter which is present. This brings us to a consideration of the CO_2 present in the air as the result of respiration.

* "Pathological Anatomy." † *Idem.*

A horse in a state of quiesence gives off 7·50 cubic feet of CO_2 every hour from the lungs, and a certain though undetermined proportion is also given off by the skin; but taking that from the lungs alone, it would amount to 180 cubic feet in twenty-four hours; or, if converted into carbon, would give us a solid block weighing six pounds.

Muscular exertion doubles the amount of CO_2 expired, but if the work be carried to an exhausting degree, the amount is lessened. A high temperature reduces the quantity expired, a low temperature increases it by about one-fifth. During abstinence the amount excreted is lessened. Disease has an important effect on the elimination of CO_2; in Tetanus it is considerably increased, in Hydrothorax and Glanders it is reduced in amount. Taking an animal in health, we find that 100 parts of expired air contains 13 instead of 21 parts of oxygen, and 4 or 5 per cent. instead of ·03 or ·04 per cent. of carbonic acid; and in addition to these a variable amount of watery vapour containing organic matter.

It is evident that if the CO_2 in the air of buildings forms an index of the amount of organic matter present, that our endeavours should be to keep that amount of CO_2 as low as possible, and as near that present in the external air as can be. The CO_2 in pure air is about ·04 per cent. The amount which experience has fixed over and above this, to allow of organic matter, is ·02 per cent.; therefore, the total of ·06 per cent. is regarded as the limit of organic impurity in buildings.

We have hitherto had but little information given as to the amount of CO_2 in stables. I can only find a few published analyses—one by Leblanc, who found, in a stable at the Ecole Militaire, ·70 per cent.; two by Dr. de Chaumont, who found ·10 per cent. and ·059 per cent.; two by Mäcker, who found in a stable at Gottingen ·85 per cent. and 1·70 per cent.; and two by Dr. Angus Smith, who found ·083 and ·087 per cent.

CARBONIC ACID IN THE AIR OF STABLES.

	Per 1,000 Volumes.
Pure stable air	·6000
Ecole Militaire	7·0000
Hilsea	1·0530
,,	·5930
Gottingen	8·5000
,,	17·0700
Manchester	·8700

ANALYSES BY MYSELF.

Mean of 14 analyses	1·5700
,, 14 ,,	1·3200
,, 25 ,,	2·1000
Largest amount found	2·6585
Least ,, ,,	·5716

Three of these show great impurity, particularly the Gottingen stable.

(*To be continued.*)

THE FELLOWSHIP DEGREE OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

AT a Meeting of the Examiners for the Fellowship Degree, held on 25th November, the following members passed the examination:—F. Raymond, A.V.D.; W. Sewell, London; J. Atkinson, London; J. T. Thompson, Sheffield; G. H. R. Wilkin, Lambourne; Albert Wheatley, Reading; J. P. S. Walker, Oxford; Hugh Kidd, Hungerford; H. R. Perrins, Worcester.

Proceedings of Veterinary Medical Societies, &c.

EDINBURGH ROYAL VETERINARY COLLEGE.

On October 28th, the sixty-second winter session of the Royal (Dick's) Veterinary College, Clyde Street, was opened with an address by Dr. Aitken, Professor of Chemistry.

Lord Provost Sir George Harrison, who presided, said he was pleased that one of the last duties of his office was to be with the students of the Dick College, in the success of which he had taken great interest during the whole period he had occupied the civic chair. The trustees had the interests of the institution very much at heart, and while they had been able to improve it to some extent during the year, he hoped that, with the means likely to be available, the buildings would be entirely remodelled by next session.

Dr. Aitken, in the course of an interesting address, referred to the increasing number of students who attended the Dick College, which was the oldest veterinary school in the kingdom, as an evidence that it was maintaining its reputation. As regarded examinations, he said that the veterinary examinations they had to pass had less claim to be considered perfect than any others he was acquainted with. He thought that the difficulty might be met by providing two examiners intead of one, as he did not consider that any examiner for degrees, however well qualified, should have the responsibility thrown upon him of passing or rejecting a candidate. In referring to pleuro-pneumonia, Dr. Aitken said they all knew the rough and ready stamping-out process ; but he hoped, with the spread of veterinary science, the time was near when something more scientific than the wholesale slaughter and burial of healthy herds might be discovered to rid the country of disease. As to the depression in agriculture, he said that it would be folly to expect that any fiscal obstructive enactments would do anything to protect agriculture from the operation of those causes which were the outcome of scientific progress. They saw the nations of the Continent and the States of America making agricultural education a national concern, and if they were to hold their own among the nations of the world they must follow that example. This would do more good than those Utopian schemes of agrarian reform which had for their object the multiplication of miserable crofts—little patches of land upon which an unlimited number of peasants, with neither capital nor the resources of modern invention, spent their energies in the vain attempt to compete with science and capital, and so multiplied a race of agricultural paupers.

Principal Walley, in addressing the students, mentioned as an instance of the present faulty system of examination, that one of the students from the Dick College, who passed without honours or distinction in the local examination, headed the list in the competition for the Fitzwygram prize of £50, which was open to the whole country.

Bailie Cranston, who had taken the chair in consequence of the Lord Provost having an engagement elsewhere, said he was happy to inform those who would return to the College next year, that they were going to take down the present buildings, and that an offer for an additional piece of ground would likely be successful. He hoped that by next year the students would have every accommodation, appliance, and comfort. This object, Bailie Cranston stated, was to be accomplished by the sale of ground in Burntisland, belonging to the College.

The usual votes of thanks brought the proceedings to a close.

ROYAL VETERINARY COLLEGE MEDICAL SOCIETY.

THE third annual general meeting of the Royal Veterinary College Medical Society was held in the theatre of the College on Monday, 12th October, 1885.

Present: Twenty-eight student members, Mr. G. W. Baker, M.R.C.V.S., twenty-two visitors, the President, and Secretary.

The PRESIDENT (Professor Robertson) occupied the chair. After the confirmation of the minutes of the last meeting, he read his report for the past year. He said the retrospect was of an agreeable character. Much good work had been performed, and this in a manner which was attractive to the members, as shown by the fact that there was, at the nineteen ordinary meetings, an average attendance of thirty. Sixteen essays have been read, discussed, and defended, and twenty *post mortem* specimens introduced and dilated upon. The essays have been of a type indicating considerable care and thought in preparation, and have elicited a large amount of useful discussion. During the whole session the utmost unanimity had prevailed, the finances are in a prosperous condition, and altogether he thought there was cause for congratulation.

Mr. H. Almond, M.R.C.V.S., was requested to adjudicate on the merits of the essays and to carry out the *viva voce* examination, and Professor Shore the anatomical specimens. The awards of these gentlemen are as follow:—

For best essay read at general meeting of the Society: the silver medal to Mr. Geo. Edward King; second best, the bronze medal to Mr. M. G. Byerley.

For best essay on "Pink Eye": the silver medal to Mr. A. Cawdle; second best, the bronze medal to Mr. W. E. Cawdle.

For best dissection of hind limb of the horse: the silver medal to Mr. P. G. Bond.

Best essay on the sodium and potassium salts used in veterinary medicine: the silver medal to Mr. T. E. Barcham.

Special prize (silver medal) for a general examination, written and *viva voce*, on the subjects of the College curriculum, to Mr. Herbert Buckingham.

Fellowship certificates were granted to Mr. John Buscombe, M.R.C.V.S., Mr. James Farmer, Mr. W. E. Cawdle, Mr. A. Cawdle, Mr. H. Buckingham, Mr. J. Blakeway, Mr. Fitz-Eassie, Mr. W. R. Walker, Mr. G. King, Dr. W. E. Folsetter, Mr. M. G. Byerley, Dr. Austin Peters, B.Sc., Mr. Crundall.

The PRESIDENT congratulated the Society on the successful session past, and in course of his inaugural address mentioned the fact that a new relationship was established between the governing body of the College and the Society. The Governors, at the request of the Society through the President, had arranged to provide a reading-room and periodicals for the use of the students. In order to meet the expense of this, a fee of one guinea would be demanded from each student on joining the College. Such payment would admit to the reading-room, and would entitle the payer to election to membership of the Society by ballot, without payment of further fee to the Society.

Nineteen gentlemen were proposed for membership. The following officers were elected:—

Vice-presidents: Messrs. Carter, McCormack, West, Blancard, Lewis, and Bray.

Committee: Messrs. Carter, McCormack, West, Bray, Lewis, Blancard, Pickwell, Peele, Chambers, Langley, Jones, and J. H. Oliver.

Auditors: Messrs. E. A. West and Oliver.

Votes of thanks to the President, Secretary, and Assistant-Secretary terminated the meeting.

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

THE sixth meeting of this Society was held at the Great Central Hotel, Carlisle, on October 23rd. Mr. Roberts, Kendal, in the chair.

MR. DONALD nominated Mr. Thompson to be President, and the following gentlemen Vice-Presidents for the ensuing year:—Mr. Tallentire, Skelton; Mr. Harrison, Warcop; Mr. Little, Abbey Town; and Mr. Watson, Ireby.

The CHAIRMAN proposed that the Secretary (Mr. Donald), and Treasurer (Mr. Thompson) be re-elected, and he accordingly nominated those gentlemen.

He also read a letter from Mr. Mulvey, with reference to the proceedings at the meeting of the Council appointed to inquire into the operation of Clause 9, in which he stated that he thought it very probable that a new charter would have to be obtained.

The CHAIRMAN called upon the President for the year (Mr. Jos. Carlisle) to read his paper.

MR. CARLISLE read the following paper on—

KUMRI, OR GENERAL PARALYSIS IN THE HORSE.

Gentlemen,—As you have done me the great honour of electing me President of the Border Counties Veterinary Medical Association for two years in succession, and as my term of office is fast drawing to a close, I have thought it my duty, as a slight recognition of the confidence you have reposed in me, and of the great kindness you have always shown to me during the time I have occupied this chair, to lay before you a few observations upon a disease which has always been of the greatest interest to members of the profession to which we here present have the honour to belong. I repeat that it has been of the "greatest interest," for the simple reason that it has been, and is now, to some extent, surrounded with a certain degree of doubt and mystery. The disease I refer to, and which I have chosen as the subject for the few remarks I now purpose offering to you, is one which I have taken the liberty to describe and define as "Dental Paralysis," or, more correctly speaking, "Paralysis Consequent upon Protracted Dentition in the Horse." It has, I am inclined to believe, and as I venture to remark, already been treated of and commented upon by contributors to the veterinary journals, under different names to that which I have ventured to bestow upon it; it may be under the name of "Kumri," or "Kummirree," "Sunstroke," or "Grass Staggers," or simply as "Paralysis in the Horse." After a long professional experience of nearly fifty years, and the close and lengthened study which I have given to the disease, I think, gentlemen, I have some warrant for asking you to extend to me your forbearance, whilst I place before you very shortly the reasons which have induced me to arrive at the conclusions I have come to concerning it. I am well aware that I am advancing theories which, I possibly shall be told, are based to some extent upon mere surmise and suspicion. I repeat that such may be the case, but I can assure you, gentlemen, that my conclusions are founded as well upon the long professional experience I have already had, as upon the careful attention and study which I have always given to the disease; and with these preliminary remarks, I will now state to you very shortly, though I am afraid it may be somewhat imperfectly, the grounds and reasons which I have to advance in support of my humble opinion, that there is such a disease or affection of the horse as "Dental Paralysis, or Paralysis Consequent upon Protracted Dentition."

The disease, generally speaking, is known and distinguished by the loss of power of voluntary motion which the paralytic attack brings about, and it affects, as you are all aware, various parts of the body, and each part affected

indicates the name by which the affection is known. It may be Paralysis—partial or complete—of some particular muscle or muscles ; as in Paralysis Hemiplegia, when the affection is confined to one side only of the body, or in Paralysis Paraplegia, involving one half of the body taken transversely.

Now, gentlemen, you are all well acquainted with the special peculiarities which the disease, in its many forms, presents ; and, therefore, it is not my intention to treat of the varied forms with which we meet it in the horse and other animals. To do so would be a very arduous undertaking indeed, and I will therefore content myself with offering a few remarks as to the cause, the seat, and the symptoms and treatment of the disease, in the form I am treating of it this evening, so far as I have been able to arrive at an opinion thereon.

The disease, I am led to believe, has its origin in the brain and nervous system, and the whole of the latter becoming involved, to a certain extent, general Paralysis is the result, as evidenced by the peculiar action of the whole muscular system. This action, I believe, is brought about by, and is the natural result of, the constant and excessive pain set up by the protracted process of dentition. The protraction of the dentition is attributable to, and caused by, the excess of blood determined to the head. The blood vessels become congested to a great extent, and continue in this condition for a long period, and thereby cause morbid disease and altered function of the brain, and particularly of the medulla oblongata and the whole nervous system. Generally speaking, the disease is most prevalent in the summer months, and especially at the time of the year when the days are hot, and cold east winds are blowing during the night. During the months of July and August, as many of you will no doubt have observed, the young horses are constantly nipping the seed from off the top of the rye grass, and this is said, by some writers, to be the cause of the affection known as " Kumri." The seed of the rye grass contains, as is alleged, some narcotic principles which are said to exercise a certain influence, and bring about an effect producing derangement of the digestive organs, and subsequently interfering with the flow of nervous power from the brain to the organs of motion—Paralysis being the result ; and it is this condition which, combined with the depending state of the head when the animal is feeding from the ground, excites the predisposing cause, namely, protracted dentition. The theory that Paralysis is to be attributed to the animal feeding upon the seed of the rye grass, appears to me to be wholly inconsistent with the fact that cases of Paralysis frequently occur when the animal had not been feeding on rye grass at all, as, to my certain knowledge, the disease has frequently been met with when the horse has never been out of the straw yard or the stable. The disease, as I am now treating of it, differs essentially from any other kind of Paralysis, inasmuch as the whole muscular system is involved. There is also another fact, gentlemen, which bears out the opinion I have advanced as to the cause of this particular disease, and that is, the disease is never met with in an aged horse. Between the age of eighteen months and four years is the period during which it generally presents itself, and it is during this same period that dental fever establishes itself, and produces morbid disease in the brain and nervous system. Within the alocolar cavities, where the teeth are formed, a very complicated piece of structural and anatomical arrangement of parts is carried on in the formation of that very necessary weapon—the tooth ; and this process, as is well known, is an extremely painful one when the vascular and nervous tissue of the tooth is in any way tampered with.

The symptoms of the disease are of a somewhat commonplace character, and easily distinguished. The first thing that draws one's attention to the fact that something is amiss with the animal, is his peculiar gait. He has a tendency, when suddenly approached, to make a rush forward, in a manner

which conveys to one the idea that he is unable to control his own movements, and has lost command over his own body. He walks with a staggering gait, and on making inquiry from the owner, it will generally be found that some slight symptoms of the disease had been observed for some time. As time goes on the symptoms become more pronounced and alarming. The animal keeps lifting his fore legs high, and stepping over in a singular way. His action behind is equally unguarded. He walks with his legs wide apart, and throws up his hind quarters at every step he takes with a sudden jerk. His head and neck generally assume a straight line, and when the head is moved laterally on the atlas and dentata, it seems to give pain, and the eye at the time is fixed in its orbit. The conjunctiva is very red, and the blood vessels are highly injected. The temporal artery is full and bounding, and the temperature high. There is weeping from the inner canthus, and the bowels are constipated. He is very unwilling to have his mouth and nose handled, which renders it difficult to administer medicine.

Now, gentlemen, I have placed before you two theories as to the cause of "Kumri," namely, the rye grass theory, and the Dental Fever theory, consequent upon disturbed and protracted process of dentition. The last-named theory is one which I claim, and, with some confidence, contend to be the true and correct one. I am, however, bound to admit that I have not yet been able to satisfy myself strongly on all points, as a satisfactory connecting medium is still wanting. The misssing link, which is to make the chain perfect, yet remains to be found. In one particular, however, I am perfectly satisfied in my own mind, and that is, that disturbed and protracted dentition plays a very important part as a predisposing agency in producing the disease. I sincerely hope that some enterprising and observant member of our profession will be able before long to supply the missing link—between the medulla oblongata and the teeth bed—which is now wanting to clear up a point involved in doubt and mystery.

As regards the treatment which I have hitherto adopted, in trying to cope with the disease, I may say that I always resort to bleeding; and, if possible, I bleed from the temporal artery, preferring, as I do, arterial section to venesection. After bleeding, I have the animal put into slings, in order that he may rest comfortably. I then administer an active purgative, and introduce a seton behind each ear, over the region of the medulla oblongata. The setons I dress with nux vomica ointment. After the action of the cathartic, I commence to gives aloes and nux vomica in drachm doses, combined with three drachms of nitrate of potass daily, for about a week. I still continue to dress the setons with nux vomica ointment, and administer occasional doses of Ferri: Sulp: and calomel with nux vomica. In the course of a fortnight or so, I remove the setons and apply a blister from behind the ears downwards. I have always found very satisfactory results follow the nux vomica treatment, but I find the curative treatment something like the disease itself—very protracted; as it is generally three to six months, and in some cases twelve months, before the symptoms disappear.

As death rarely ensues from an attack of the disease, I have only had an opportunity of making two or three *post-mortem* examinations, and I will only refer to the last which I made. About two years ago, I attended a horse which had been affected with "Kumri" for some time. I had him put into slings, but in spite of my treatment he continued to get worse, and one morning I found him dead in the slings. The owner of the animal wished me to make a *post-mortem* examination, and I did so. I made a very careful and minute examination. I found the internal viscera in a normal state The lungs were congested with dark blood, which I attributed to the pressure from the slings. I made a section of the cranium, and found the brain—

particularly the medulla oblongata—in a very soft and pulpy condition, almost floating in water of a light brown colour. The spinal cord presented very nearly the same appearance throughout, excepting that there was little or no water. I also made a section of the alveolar cavity, which presented a most singular appearance. The first and second molar tooth, on both sides of the upper jaw, were detached and surrounded with thick white pus. The whole contents of the cavity presented a very abnormal and unhealthy appearance, and emitted a very disagreeable smell.

I have now, gentlemen, completed the few remarks which I intended offering to you upon the mysterious disease known as "Kumri," but I cannot sit down without thanking you for the kind and very close attention which you have given to me. I sincerely trust that one result of this meeting will be that each one, and all of us, will go away from this room with the strong determination to do all that lies in our power, and use our best endeavours, to try and find the missing link to which I have made allusion. The mysteries which still surround the disease will, I believe, remain hidden for a short time only, and will be dispelled by the light which a noble profession will before long cast upon it.

At the end the CHAIRMAN invited discussion.

Mr. HARRISON (Warcop) thought that Mr. Carlisle had too hastily arrived at the conclusions contained in his paper, to the effect that the disease was new, and not well-known. He had made one *post-mortem* examination, which seemed to have had a greater effect on Mr. Carlisle's mind than it warranted. Kumri was simply a variation of the common ailment known as Stomach Staggers.

Mr. CARLISLE was of opinion that Mr. Harrison had mistaken the disease. He had been speaking of the disease brought about by Indigestion.

Mr. PEARS (Langholm) suggested that similar symptoms of dental disturbance as described in Mr. Carlisle's paper produced Indigestion, which acted on the brain, and thus caused the illness. The same principle extended to young children. There was also a common ailment of this nature amongst sheep in his district.

Mr. TALLENTIRE endorsed Mr. Carlisle's views on Paralysis being caused by dentition.

Mr. KENDALL also endorsed Mr. Carlisle's observations as to the age at which animals were usually attacked with this disease. He had a case now under treatment; but he had always looked upon this disease as Malnutrition of the Nervous System, and was occasioned by some fault in the food. With regard to the treatment, he had found a purgative, followed by tonics, had been successful, though the recovery was a slow process.

Mr. ROBSON's experience had found the Paralysis affect animals of all ages; but this would not be Dental Paralysis spoken of in the paper.

Mr. TALLENTIRE wished to know if Mr. Carlisle would advise a seton being run up the forehead.

Mr. CARLISLE: No.

Mr. THOMPSON confessed that the idea was a new one to him; but from what had been said, Mr. Carlisle's theory seemed feasible, that rye-grass and dentition might have the effect suggested.

Mr. WALKER (Kirby Lonsdale) explained his treatment of two cases of Stringhalt, in each of which the horses had the peculiar movement described by Mr. Thompson.

Mr. THOMPSON said he had found bromide of potassium successful in similar cases; but it was a very great point to at once examine the animals' mouths, relieve the congested parts about the gums by lancing freely, place them under the influence of the bromide, and then put in the nux vomica.

Mr. ARMSTRONG did not think he had ever seen a case of this kind. He

had seen several cases of Stomach Staggers, chiefly in elderly horses. He had a case then under treatment—horse, six years. It seemed more a case of Chronic Tetanus. Had gone on for five or six months. Perhaps a seton behind his ear would relieve him.

The CHAIRMAN expressed their indebtedness to Mr. Carlisle for bringing the subject of Dental Paralysis before them. It was a view he had never taken or heard of before. We ought to remember the nervous system of animals was exceedingly curious and complex. His own opinion very often had been, with regard to the illness described, that it had been caused by the high sun. He had seen cases of that kind. Extremes often produced very nearly the same appearances. He had seen horses perished in water, or caught in boggy land, show very similar symptoms of Paralysis. These chronic cases of immobility, as are mentioned in Williams' works, seem to show that a great deal depends upon the seasons ; that when fodder is badly housed, not only with the ergot of rye, but also with fodder, animals frequently have the complaint as badly in winter as in summer time. Improper food being almost in a poisonous condition when administered. He recommended notes of observation to be made in peculiar cases, particularly keeping the age of the animal in view. With regard to treatment, he had invariably treated such cases by putting a good seton at the back of the neck, blistering very liberally, and keeping up the irritation some time. He had found it best to administer a bold purgative. He could not say he had ever found benefit from bleeding ; but prompt and decisive action, followed by a good dose of spirit, which seemed to have the effect of causing the gastric and other juices to secrete freely, had. It was a difficult matter to get the bowels to respond to the action of purgatives in these cases of brain and nervous disorders.

Mr. HARRISON now thought he had been discussing some other complaint. As to the treatment of Grass Staggers, which arose from the quality of the food, he applied cold water to the head and sheep skin to the back, without putting in a seton, which only caused the animal to be tortured, and was put in on speculation.

The CHAIRMAN remarked that the animals were three-parts insensible to anything of the nature of pain or otherwise.

Mr. DONALD thought the paper would bear a good deal of thought. The theories were open to objection, but Mr. Carlisle's extended experience made him (Mr. Donald) diffident in remarking on them.

Mr. CARLISLE, in replying, said he should have liked a little more discussion. Two or three points had never been touched upon : age, for one thing. They never saw the disease in a horse after four years old. You may see partial Paralysis, but not through the whole system. What influenced him in his theory of dentition was, that he never saw a case in a horse over four years old. He saw it from eighteen months, but most frequently about two or two and a half years, before the first dental removes. There was another feature worth a thought, and that was the peculiar way the horse had of going. They were never consulted in a case of Kumri until the illness was established, very possibly three weeks or a month ; the owner having seen something very peculiar in his going, and particularly, as observed in my paper, it has come suddenly upon him. He makes a rush forward, as if he was alarmed by an object, and it takes much to set him right again. When he trots he does so awkwardly. There was no other disease which affected a horse in the same way. He did not mean to say that dentition was the sole cause. There would be objections to the theory because it was never broached before. As to treatment, bleed from the temporal artery. There is at once a considerable relief for perhaps forty-eight hours. The illness, however, always returns, unless you start with your counter-irritation. It was of no use giving bromide of potassium. Brisk purgative was the best

thing, keeping up that with a drachm of nux vomica, and three drachms of nitre, if you could administer it. He dressed his setons with nux vomica, and thus had no difficulty in getting the medicine administered. He had no doubt that the seeds which the young horses nipped off the top of the grass had a good deal to do with the disease. It was an important excitant, and, meeting with the secretions in the stomach, might have the effect referred to. I have no knowledge what the chemical action of this might be. It sometimes passed for Sunstroke, or it was the cold east winds blowing in hot weather, or it may be taken for Grass Staggers, and is treated for that, too. A horse would get well in that case in three or four days. You cannot cure a case of Kumri in as many months, and perhaps when he does get well there is a strange pulling out of the hind leg; there is very often something lurking in the system. Cases are infrequent—not at all in some years, and a great many proportionately in others. There seems to be a predisposing agent in all nervous cases. He instanced several strange freaks in connection with dentition, and produced a milk tooth taken from the base of a horse's ear, and in another case a perfect eye was found resting on the temporal bone. There seemed to be a very great connecting medium in diseases, *e.g.*, Tetanus resembled Kumri very much. He thanked them for their attention.

The further discussion of this subject was postponed till next meeting.

The CHAIRMAN then called upon Mr. Donald to introduce for discussion—

THE RESPONSIBILITY OF VETERINARY SURGEONS IN THE EXAMINATION OF HORSES AS TO SOUNDNESS.

He said :—

Gentlemen, this is a subject upon which opinion is very much divided, and much might be written by the way of commentary on the various opinions held by different individuals, but I shall purposely avoid trying to reconcile or disprove the different views held.

I will introduce the subject in the form of three questions, quoting a few cases and opinions bearing upon the points, and leave the further elucidation thereof to the meeting.

Firstly.—Is the veterinary surgeon pecuniarily liable for errors of judgment, or mistakes, in the examination of horses as to soundness?

Secondly.—If so, how can he best protect himself?

Thirdly.—Is the usual fee of 10s. 6d., for examination, a fair and reasonable remuneration for the risk, responsibility, and service rendered?

Firstly.—Is the veterinary surgeon pecuniarily liable for errors of judgment, or mistakes, in the examination of horses as to soundness?

This question was much discussed and written upon in 1879 and 1880. It was introduced by Mr. Fleming, in a paper on the "Veterinary Surgeon's Responsibility," in which he said, in the examination of horses as to soundness, the veterinary surgeon assumes serious responsibilities, which do not always cease at the time of examination, but may continue for some time, if recent instances are to be taken as evidence. It removes the responsibilities of buyer and seller, and places these on the shoulders of the experts, with the knowledge that they may be legally sued and cast in damages. In committing their interests to his judgment, and remunerating him for his services, they have an undoubted claim upon him for redress, should his testimony prove to be erroneous.

The case of Murdock *versus* Swann seems to have an important bearing on this point. In this case, Mr. Murdock, M.R.C.V.S., Leeds, sued a Mr. Swann for professional services rendered in the examination of horses. The defendant, Swann, repudiated his liability, and set up a counter claim,

holding the plaintiff Murdock liable for error of judgment in wrongly certifying the animal's age.

The Judge found Murdock was not entitled to his fees, and also found in favour of the counter claim, for which he gave verdict for £15 and costs. This case cost Mr. Murdock about £100 expenses.

Mr. Peter Taylor, speaking at a meeting of the National Veterinary Defence Association, in 1879, said they had an able and judicious member on the Council of that Association, who considered that we are entitled to our opinion, and unless it can be proved, we have a right to give it, and would not be actionable in a court of law ; but the Leeds case, he observes, is one that places upon record the fact, that a professional man is considered an expert in that particular branch of science he represents, and is actionable at law for a sum of money if he conscientiously gives an opinion which would be at variance with two of his brother experts. Mr. Moore, of London, says there can be no doubt whatever that we are liable for damages, in the examination of horses as to soundness, in the event of a mistake.

At Liverpool, in 1878, the National Veterinary Defence Association arbitrated two large claims against veterinary surgeons, settling them at a cost of £66 12s., and the President remarks that a great number of other cases have been arranged and settled by the tact and wisdom of that Society. Besides, many cases have received their opinion as to the advisability of an amicable settlement, or as to the most prudent course to pursue. The particulars of these cases I am not able to give you, but the fact is that they have been settled by that Society, thereby admitting their liability.

The preceding remarks seem to answer our question in the affirmative.

Now let us see how far we can adduce evidence to disprove these opinions.

Mr. James Lambert, commenting on Mr. Fleming's remarks, says : " I beg to dissent from the opinion that a veterinary surgeon is justly responsible at law for the consequences of his ignorance. Reasonable skill, of course, is necessary, but the common-sense view of the matter is that the employer of the professional man, being free to choose, engages him because he thinks his ability will suit his purpose, and he is not entitled to fix a standard of knowledge, unless there be some special agreement."

Mr. T. Dollar, London ; Tom Taylor ; Lawson ; and Hopkins, coincide with Mr. Lambert's opinion.

The case of Walker *versus* Barling, tried at Derby, was an action brought by a gentleman named Walker against Mr. Barling, V.S., of Hereford, to recover £131 damages, for alleged negligence of defendant in giving a certificate of soundness of a horse suffering from Chronic Lameness, it being alleged the horse suffered from Navicular Disease. Mr. Dugdale, Q.C., who appeared on behalf of Mr. Barling, addressing the jury, said this was a peculiar action, and he doubted whether there had been one like it before. The issue was, did the defendant use ordinary skill and care in the examination of the horse ? It was not a case of mistaken judgment, but whether he had not brought reasonable skill to the practice of his profession.

The defence set up was that the horse was apparently sound on the day the certificate was made, and that in his examination defendant acted with ordinary skill and care.

The Judge, after summing up, put the following question to the jury—Was the defendant guilty of negligence in giving the certificate complained of ? The jury found defendant was negligent in giving the certificate, but assessed damages at one farthing.

Judge : Verdict for plaintiff, nothing to be said about costs.

Mr. Barling was supported by Messrs. Thomas Greaves and Peter Taylor, Manchester, and Professor Pritchard, who testified to the correctness of Mr.

Barling's certificate. In this case the verdict against Mr. Barling goes to prove the veterinary surgeon's liability ; but the opinion of both counsel and judge seems to lay down, that it is necessary to prove negligence and want of ordinary skill and care. In this case we have both a *pro* and *con* to our question.

At Penzance County Court a case was tried, in which William Mann sought to recover £50 from Mr. John Stephens, veterinary surgeon, Penzance, for having certified a horse sound which was a roarer.

In this case His Honour said, for the plaintiff to support his action, he must prove that the defendant acted as no intelligent and properly educated veterinary surgeon would have done when he examined the horse, and that he did not exercise a reasonable amount of skill and intelligence. The plaintiff failed to make out his case, and the Judge gave a verdict of non-suit.

(*To be continued.*)

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of the above Association was held at the First Avenue Hotel, London, on 27th November, W. G. Flanagan, Esq., President of the Association, in the Chair. There were also present twenty-nine members and three visitors.

The following gentlemen were unanimously elected Honorary Associates, viz. :—James McCall, Esq., Principal, Veterinary College, Glasgow ; Wm. Williams, Esq., Principal, New Veterinary College, Edinburgh ; Thomas Walley, Esq., Principal, Veterinary College, Clyde Street, Edinburgh.

The following gentlemen were unanimously elected members of the Association, viz. :—Mr. W. Wilson, F.R.C.V.S., Berkhampsted, Herts ; Mr. J. Matthews, F.R.C.V.S., Royal Horse Guards (Blue) ; Mr. Charles Sheather, F.R.C.V.S., Regent's Park, London ; Mr. Arthur E. Barlow, M.R.C.V.S., Reading.

The TREASURER read a statement of accounts for the past year, which showed a balance in hand of £41 5s. 10d.

The following Office-bearers for the ensuing year were unanimously elected, viz. : President—Mr. J. F. Simpson, F.R.C.V.S., Maidenhead. Vice-Presidents—Mr. H. L. Simpson, F.R.C.V.S., Windsor ; W. G. Flanagan, Esq., Reading ; Mr. F. W. Wragg, F.R.C.V.S., London ; Mr. Geo. A. Lepper, F.R.C.V.S., Aylesbury. Hon. Treasurer—Mr. Jas. P. S. Walker, F.R.C.V.S., Oxford. Hon Secretary—Mr. H. Kidd, F.R.C.V.S., Hungerford.

Professor PRITCHARD then delivered a Lecture on—

"STABLE MANAGEMENT."

He said :—

Mr. Chairman and Gentlemen,—I, for one, am not very fond of long sermons or lectures ; an old friend of mine used to say that if they are long, they ought to have a great deal of subject matter in them, to make them interesting. I propose firstly to speak of the stable, and afterwards of the treatment of the horse. Of course, a great deal of what I shall have to say on these points may be considered as universal and general knowledge ; I do not expect to say anything particularly new ; but some may be inclined to differ from me on certain points, and I hope that such gentlemen will give full expression to their opinions, and thus teach me something on this subject. I am of opinion that horses are better in loose boxes than in stalls. Those who have had any experience of the behaviour of horses in the stable, will admit that they can lie down better in the loose box ; they are

more content ; they feed better ; there is less chance of the food being thrown out of the manger ; and the animals are altogether more comfortable. With regard to the size of the loose box, it should be at least twelve feet square—as much larger reasonably as it can be made. As to stalls, I consider that they should be at least six feet six inches wide, by ten feet deep, at the lowest estimate. With reference to the construction of the stable, I propose to speak of the roof, the floor, the manger, ventilation, and drainage. I am very fond of a thatched roof ; it is the warmest in winter, and the coolest in summer. I know that the objection to this is, that in towns a thatched roof is almost an impossibility, and that even if this were not the case, it is unsightly. But this difficulty may be got over. The roof need not be like a country barn. The outside surface can be of galvanized iron, with the thatch underneath, and laths. This makes an excellent roof—warm in winter and cool in summer. As to a loft over the stable, I know that space is frequently an important consideration ; still, I say, "When you can avoid it, do not have a loft." When one is absolutely necessary, a continuous shaft should be made through the roof. This is a good arrangement, and can be easily carried out. The floor should be above the level of the ground outside. There are several good reasons for this, one of the most important of which is that the drainage is facilitated. It need not be so much raised that the horse stumble in entering the stable ; a few inches above the ground level will do. On the subject of the material of which the floor should be composed, opinions differ. Some advise one plan, and some another. Amongst the various floors recommended are blue Staffordshire bricks, with furrows in them ; square pieces of rough granite ; pale-coloured bricks ; asphalte ; a mixture of cinders and lime, or of sand and lime. The best floors, in my opinion, are those composed of blue bricks, provided that the grooves in them are sufficiently deep. If they are not deep you will find that horses slip on them ; but if this depth of groove be enough, this brick makes an excellent floor. As to the pale bricks, I should never advise their use ; they wear badly, and until they are worn to some extent, they make a very slippery floor. Asphalte, again, is terribly slippery, and many accidents are caused by its use, both in our streets and stables. A mixture of ashes and lime makes a very good and almost everlasting floor, if it is allowed time enough to harden. A floor of sand and lime is a very good one, but does not wear so well as that where ashes are employed. It is necessary that the floor should slope to some extent. In my opinion it should slope from the outer borders towards the centre ; in the case of a stall, from the manger towards the back. The slope should only be sufficient to allow of the fluid running off ; if it is too great, an injurious strain is thrown upon the hind quarters of the horse.

The best manger is an iron enamelled one. There are, however, iron mangers made of cast-iron, with an ordinary iron surface in the inner part. There is a manger very superior to this : it is covered on its surface with white enamel, and with the slightest care it is always as clean as a dinner-plate. The objection to the iron manger is that horses will occasionally put their feet into it, and numbers of accidents have taken place from the manger breaking and the animal getting a lacerated limb as a consequence. This can be avoided by packing in the under surface of the manger. There is nothing unsightly about this, and it is quite solid. A great mistake is often made in having the mangers too large. I am not an advocate of giving the horse a large quantity of food at a time, as he wastes a great part of it. If, instead of having a semi-circular front to the manger, it be made straight in front, it is almost impossible for horses to throw the food out. I know of a stable with such mangers, containing about one hundred horses, and you may go round on a Sunday morning—when horses have the most time to waste their food—without finding a handful on the floor.

In alluding to the subject of ventilation, I cannot but be astonished at the differences of opinion which exist as to the number of cubic feet of air necessary for a horse. Some will say five hundred feet, others twelve or fifteen hundred; I think that there should not be less than eight or nine hundred feet, and as much more as you can obtain. Some of you will say, "Yes; but we cannot get that; the size of the stable will not allow of it." I could take you to railway arches where there are between eight and nine hundred horses, and some time since, if you entered in the morning, you would think you were in an oven. The engineer said that the arches could not be so altered as to secure the necessary ventilation; accordingly the use of an arch here and there was abandoned, and now the place is well ventilated. This is the remedy when space is so valuable: lessen the number of horses in the building. It seems to me that nothing is more simple than to ventilate a stable, and I am astonished at the number of schemes which are propounded, some of them very expensive. To put the matter plainly, you want an opening near the floor, and another near the roof. The air becomes lighter from the increase of temperature surrounding the animals; it ascends, and if it is to be got rid of there must be some outlet at the upper part of the stable. Fresh air must also come in, or the other will not go out. The only thing I stipulate for in the simple plan I allude to, is the avoidance of draughts; some people say that it is necessary to have an opening over the horse's head; in my opinion this is quite an erroneous idea. I shall be glad to hear gentlemen present on this point.

It is a great mistake to have a drain, a place for the collection of urine, in the stable; it should be outside. I would not have any underground drainage. The part of the floor which conveys the fluid away should be grooved and on the surface, and these grooves should be continuous to the outside of the stable. The late Professor Spooner built a stable at the lower part of the lower paddock, near which now stands one of the lecturing rooms. You will find that the drainage is on this principle: there is a groove not more than half an inch deep by two inches in width, commencing from the centre of the stable. The floor is made to slope towards that groove, which runs outside the box. It then leads into a long one, and from that proceed other grooves to the outside. Some people will say that this cannot be done in large stables. For the information of such, I may say that I had the superintendence of the building of a cart-horse stable, where thirty or thirty-five waggon horses are kept. I adopted the same system, and you will find that stable always sweet, because there is a facility for the urine to pass away. If you have the usual urine gutter along the floor, it is always choking; it conveys the urine into some kind of receptacle inside the box, and do what you like there will always be an offensive smell. With the groove I have mentioned, and a tap turned on now and then, or a bucket of water thrown down, you have the stable always sweet.

Horses in stalls must always be tied up, and it is better to have a rein on each side of the head-collar. Chains are objectionable on account of the noise they make; hempen halters are very readily worn out, and horses gnaw them. I recommend a rein of hemp, into which horse-hair is twisted. The advantage of having a rein on each side of the head-collar is that the animals cannot turn round, and they cannot so well get their hind legs over the rein. The head-collar should have a nose-piece with a buckle to it. The saddler makes the head-collars all of one size for all horses, and many accidents occur from the horse putting his foot into the nose-band of it. If there is a buckle on the nose-piece, this can be prevented by adapting the size of it to the horse. Then again, many horses will slip their head-collars and get loose. A strap round the neck is often recommended as a preventive. As to holding the horse, it answers the purpose, but it spoils the look of the

mane. I will suggest to you a means of preventing this awkward circumstance happening: take the ordinary head-collar, attach a loop at the back about an inch long, through which is a strap, about half an inch in width, to buckle round the neck. This adds very little to the expense, and renders it impossible for the horse to get off the head-collar. For bedding, I like straw. Thousands of horses are bedded with moss litter. I am obliged to meet with it, but hate the sight of it, and do not believe that there is any economy in the use of it. If you will take twenty-five horses out of one stable bedded on straw, and twenty-five out of another stable bedded on moss litter, I could tell you which were bedded on straw and which on the other material. Horses do not rest upon these other materials as they should. If a horse is bedded with nice clean straw, he will eat a certain quantity of it, and it does him no harm, but good. Moss litter stops up the drains and produces a most offensive smell. I know very well that there are many advocates of moss litter, and I believe that there is no trade in which there is more competition. People say that the urine soaks into the moss litter, which disinfects it. I do not believe this; moss litter interferes with the health of the animals, and another great objection to it is that the stable is never decent. I have no great fault to find with sawdust or sand. Cocoanut fibre is, in my opinion, preferable to either sawdust or sand. It cannot be obtained everywhere, but in some places may be had for the drawing, and it makes a bedding superior to all except straw. I shall be told that there are horses which, if they are littered with straw, will eat too much of it and make themselves ill. In these cases I would muzzle the animals, or give them some other bedding. It is true that muzzles may produce discomfort, but it is not often necessary to use them; and if they were productive of such ill-effects, race horses—of which the larger proportion wear muzzles—would not be in such good condition as they are. I repeat, I do not believe that there is any economy in the use of these other materials for bedding.

As to cleanliness, I need not speak much. It is as necessary to the horse's well-being as to our own. I think that the horse should be cleaned—I mean groomed—twice a day at least, whether he goes out or not. I recommend the body brush, and think the dandy brush is one of the greatest curses that was ever brought into the stable. Let the animal be well wisped, and the body brush and sponge used. Instead of using a damp hay wisp, try a straw one. It will put a better appearance on the horse's coat, and is better as regards cleanliness. The groom cleans the animal to make him look smart. I am thinking of the benefit he derives from the alteration in his skin, and from the increase of circulation. With regard to the cleanliness of his feet and legs, the feet should be picked out, but the legs should not be washed. In certain circumstances a horse may be washed all over, but I believe a great deal of harm is brought about by this indiscriminate washing of legs. I do not say that Mud Fever will not occur under the best management, but I think that there is no doubt that very many cases are brought about by washing of horses' legs immediately after work. Some grooms will ask you how it is possible to clean a horse's white legs without washing them. I reply that it is quite simple: Firstly, well brush with the body-brush, then use a clean towel and sponge, and you will get the legs perfectly clean. By this means you avoid Mud Fever, Cracked Heels, and the formation of Windgalls to a large extent. Supposing you have a horse brought in from a muddy journey; let him be scraped, the greater part of the mud will be thus removed; put on to his legs an old pair of bandages, and allow the animal to dry. You can then brush off the mud, and get the horse clean without the injurious effects produced by washing the legs. I need not say anything to you about the body clothing. As to bandages, I always use flannel bandages,

which I keep on night and day ; they are only put on tight enough to keep them in the position in which they have been placed. By using these bandages thus the legs wear better, and you prevent windgalls to a very great extent. I recollect a case of a grey mare I had some years since When she first came to me she had bad windgalls in her hind legs. She was not exactly lame, but used her fetlocks stiffly when she first came out. I simply applied bandages as I have described, and in three months the windgalls had disappeared, and they never returned again. The benefit produced by these bandages is caused by the support of the circulation, and the moderate pressure imparted by them. Race-horses always stand in bandages, and there are no better legs than theirs.

With reference to feeding, I think that this should take place frequently, and not less than four times a day ; but in order to prevent indigestion, I recommend that water should be given before the food. Mr. Abernethy said that we ought never to drink at meals, and that if we must drink, the worst thing we could take was water. I quite agree with him. When you give a horse water, it passes into the stomach, and from there almost directly into the small intestines and the cæcum. I have proved this to be the case. If the water is given first, it at once leaves the stomach, and that organ can deal with the food without interference; the gastric juice, undiluted, can perform its functions. When water is given directly after feeding, it does not leave the stomach ; it dilutes the gastric juice, and what is the consequence ? Instead of the stomach performing its functions, partial decomposition of the food sets in, and then follows the consequence of indigestion. Of the various kinds of provender, I prefer oats, and would advise that they be bought as good as possible, weighing from thirty-eight to forty pounds per bushel. As to quantity, I think a quarter of a peck at a time should be given, with a little chaff or bran. Many horses will greedily swallow their food, and to prevent this, there is nothing like adding a little hay chaff. Some people advocate the crushing of oats. I disagree with this, except under exceptional circumstances, such as where a horse can only improperly masticate his food, or suffers from diseased teeth, or where he obstinately bolts his food. With some horses I would not confine myself entirely to oats. In the case of old horses, for example, or when a little extra stimulating food is necessary, I would give some peas or beans. When peas or beans are given, it should only be in small quantities ; a pint at a feed is quite sufficient, and almost too much. In cold weather, also, a few beans may be given. I disagree with the practice of giving a hunter, after a hard run, raw flour gruel. I think that it is most objectionable, and that it is answerable for many cases of Laminitis, which is attributed to the hard run. If you boil the gruel, it is a different thing, but raw flour and water is a mistake, and those who use it will find it out to their cost. I do not like maize for provender. It does not contain enough of the muscle-producing material, and too much of the fatty. It was adopted by the Midland Railway Company some three years ago, with their eleven hundred horses in London. We found a great many cases of Indigestion and bowel affections, and the animals did not work so well as when they were fed upon other food. Another objection to maize is that the fæces of horses fed upon it has a very nasty effluvium. If I gave it at all, I should soak it or break it. Then, again, it is so difficult to say whether maize has been badly harvested. You cannot discover this by the smell or taste. If it has not been well harvested, it will create a great deal of mischief. At one time I was inclined to blame it largely for Azoturia, and even now I find more cases of this malady where horses have been fed on maize, than where other food has been used. I am of opinion that the horse can have sufficient exercise in the loose box, if he is not taking much stimulating food. If he is being

sumptuously fed, he should go out twice a day. I prefer this to a long single period. Exercise stimulates the circulation in his limbs, and not only there, but in every part of his body. It is necessary for the viscera that the horse should take exercise. To use a trainer's phrase, "It opens his pipes," and sets into play those air-cells which would without exercise be doing little or nothing.

When I began to speak, I had the intention of asking your attention for about a quarter of an hour, but I find that I have already occupied you three times as long. I must, therefore, conclude, and avoid tiring you. This is a subject which has sufficient in connection with it for a course of lectures rather than for one. I, therefore, must ask you to excuse my brevity on some points. While coming here I thought, perhaps, what I had to say respecting the matter was more fitting for a farmers' club than for a meeting of this character. However, probably there exists, and I trust there does, such a difference of opinion in regard to some ideas advanced, as will give rise to a full discussion. Good results must ensue upon this, and I shall be amply repaid for having addressed you to day.

On the motion of Mr. WRAGG, seconded by Mr. LEPPER, it was agreed that the discussion on this subject should be adjourned until the next meeting.

A cordial vote of thanks was given to Professor Pritchard for his address.

A hearty vote of thanks was also given to the President.

The members and visitors afterwards dined together, on the invitation of Professor Pritchard, Mr. Wragg and Mr. Walker (1st Life Guards), and a most enjoyable evening was spent. H. KIDD, *Hon. Sec.*

CENTRAL VETERINARY MEDICAL SOCIETY.

A MEETING of this Society was held on the 5th November, at the First Avenue Hotel, Holborn, Mr. F. W. Wragg, President, in the chair, and fifteen Fellows being present.

The PRESIDENT addressed the Fellows as follows :—

Gentlemen,—I sincerely thank you for the honour you have conferred on me by my re-election as your President for this session ; it is an honour attended with somewhat onerous duties, but these I intend to use my utmost endeavours to efficiently perform, so that during my term of office the interests of the Society may be steadily advanced.

I must ask you all to give me your assistance in this most worthy object, for by supporting our Society we shall tend to foster amongst us the spirit of scientific advancement, without which the veterinary profession would surely deteriorate. Some of you may aid us by preparing papers on subjects which will stir our thought, and promote interchange of opinion ; all may do great good by their regular attendance at our monthly meetings.

A short retrospect of the proceedings of the Society during the past session may not be out of place : nine meetings were held, and at each was introduced, or discussed, important matter, both novel and instructive, and relating to subjects of the highest interest to the profession. We had in the essay read by Mr. Woodger a valuable review of his experience of the disease Tetanus, with complete statistics compiled from his carefully kept case-books. I must say that in the novel ideas he expressed he afforded us much food for reflection. At another of our meetings Mr. Sheather first publicly exhibited for inspection the novel method of shoeing, which has so deeply occupied his attention and inventive ingenuity for many months past ; the meeting was well attended, and his lucid and carefully thought-out explanations were received with great

interest. I will take this opportunity of expressing our indebtedness to Professor Axe, for the valuable information brought before us in the form of an address on two occasions during the past session, the first being on the subject of Milk in Relation to Public Health; he succeeded in most ably demonstrating the close interest which the veterinary body has with the subject. His second topic was Azoturia, or, as he would term it, Paroxysmal Hæmoglobinuria; I consider that not only our thanks, but the thanks of the whole profession, are due to Professor Axe for his investigations into the pathology of this disease. You will remember that he conclusively demonstrated to us the fallacy of the idea that an excess of urea existed in the urine, and proved that albumen was there present, as well as hæmoglobulin.

You will, I think, agree with me in considering we have had a successful session. I hope that during the one now commencing we shall have a still larger attendance of Fellows. Eleven is not a great average, even though we hold many meetings. Possibly it would be to the advantage of the Society if we met less often, for more advantage would accrue to all from the holding of six, or even of four, fully representative meetings.

I am pleased to record the fact that we have added to our strength many new Fellows during the past few months, an evidence that interest in our Society is increasing. Let us all endeavour to maintain the position of the Central Veterinary Medical Society, and in concluding I will ask one favour —let no one of its meetings be less fully attended than to-night's.

ALFRED BROAD, *Hon. Sec.*

THE MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE half-yearly meeting was held at the George Hotel, Rugby, on October 23rd. Mr. H. M. STANLEY (Birmingham), President, in the chair.

Mr. Harry Simpson, J.P., of Windsor, was proposed as a member of the Association.

A letter was read from Mr. Kidd, relative to the Fellowship Clause in the Supplementary Charter.

The PRESIDENT thought it would have been better if the clause had not been inserted.

Mr. PARKER said the clause had been passed too long ago, and they had let it go too long to really make any alteration. He did not think, however, there were sufficient Fellows to carry on the whole business of the Council properly.

Mr. GOODALL could not see why the majority should be ruled by the minority, to start with.

Captain RUSSELL said he hoped they would look upon him as being on the best of terms with them. He reminded them that when the Act was passed in 1876, they did not take the trouble to read it and study it, but allowed the time to go by when they could have qualified as Fellows. They neglected the opportunity to pass the examination to qualify themselves, and now they said to those who had taken the trouble to qualify, and had borne the labour and heat of the day, that the examination was a farce. As one who had passed it, he could say that it was not a farce. Were they to stand by and then, after ten years, try to over-ride that Act simply because they did not take the trouble to pass? Whose fault was it that they had not passed? He heard it said at Birmingham that the profession did not know that this qualification was required; but did not every one of the profession receive a copy of the Act? And did not those who attended the annual meeting in London, and heard it discussed, want to have it passed over without hardly

expressing any disapproval; and now, because they found the advantage taken out of their hands by those who had taken the trouble to pass the examination, they were going to do—he could not say what, he could not quite understand what they wanted to do. He, and four or five others of the Association, had taken the trouble to read and study and go up for this examination; and in regard to the statement made in London, that after ten or fifteen years the examination could be slurred through, he could only say that they had a most severe examination, and he should feel, personally, much affected if he heard that any members of the profession were admitted to that honourable degree by slurring through, instead of passing, a just and honest examination. But the point they had to argue was the fact that at the last moment they, as members of the veterinary profession, found out that they were going to be deprived of their rights if they did not get F.R.C.V.S. put after their names in the next two months; and he could only appeal to them, as one man among many, whether it was not an honourable distinction, and whether they, who were always talking that they wished to advance the profession, and give it an honourable status in the world—whether it was not an appeal to their honour to qualify themselves for that distinction. He believed they could do it if they only put their shoulders to the wheel. He believed a proposition was passed by the National Association that after all there was not so much in the clause—as it was possible for those who did not wish to go in for the examination, to pass a practical examination, and not undergo anything of a theoretical nature. He asked them to consider the matter with great deliberation before they attempted to alter the Act, at great expense, and lower the profession in the estimation of the public; and to consider whether an arrangement could not be made which would leave themselves free to meet the propositions before the Council, and prevent what, in his mind, would be a catastrophe upon the profession if they attempted to rescind Clause IX. He asked the President if he remembered the proposition at the Birmingham meeting?

Mr. MALCOLM said there was a proposition, carried by 26 votes to 8, somewhat similar to the one to be put, as far as his memory served him. With reference to the Supplementary Charter, several people at the Birmingham meeting were doubtful whether it was really legal, and some of them felt inclined to test it some time or other; and that was a point upon which he should now like to hear some of the members speak. The very name of the charter would lead one to believe that it was to be something in addition to what had gone before, and that all the members who were entitled to sit on the Council before this Supplementary Charter was obtained were not affected by it.

Mr. GREAVES said the Council in London had had this matter before them; a committee was appointed to consider it, and had very freely discussed it. The conclusion they came to was to recommend the Council to take counsel's opinion, to ascertain whether the Supplementary Charter over-rides the Charter of 1844, and also whether the members of the profession in existence previous to 1876 would be affected by Clause IX., or whether it would only affect those passed since 1876. The solicitor was now employing counsel, whose opinion they should have before them in January next; and in his (Mr. Greaves') opinion they must wait till then to see how they really stood. In the event of it being shown that the Charter of 1876 did not over-ride that of 1844, then the whole subject under discussion fell to the ground and would be of no effect. But if it was proved that it did over-ride the Charter of 1844 there was no help for it, and those who wished to become members of the Council must become Fellows, or else they must get a new Charter, which would cost £500 or £600, and they had not that money to spend. From the observations at this and other meetings, he felt that the original promoters of

this Fellowship Clause had been reflected upon. As one of the originators, he could tell them that their object was simply and purely for the good of the profession : to give an inducement, which did not then exist, for members of the profession to study more and raise themselves higher—to obtain more knowledge and become more respected in their profession than they had been up to now. And they did expect that a greater number would take advantage of the Fellowship than had done. There was no provision by which any member could become a Fellow when he had been in the profession fifteen years merely. At the Council meeting it was most indecorously stated by a professor that the examination was a farce. It was not so, and it was only those who did not know who said so. Because only two had been rejected out of fifty, it was said that it was a farce, but they did not remember the other side of the question—that it was the most worthy men of the profession who became Fellows ; and it was only a pity that the members who did not become Fellows did not see it in the proper light, instead of raising this grudging opposition to those who had worked hard for it. They saw what the Council was doing, and he hoped they would have patience and wait till January, so that, if they found their position was untenable, they could recede from it. At the last examination a greater number of practical men went up than ever for the Fellowship, and there was a larger number still waiting to be examined again. When they saw old practitioners, who had been from college twenty years, going up, it was not true that they could not work themselves up to it. They could do it by a little study. It would be improving themselves, and all in this room might become Fellows ; and, as regarded there not being sufficient Fellows, there was sufficient to carry on the business for twenty years.

Mr. MEEK said no doubt it was an unfortunate thing for the profession for allowing the clause to be inserted, and they had been very remiss in not noticing the clause before. As regarded all becoming Fellows, they could not all do so ; and it was not in the power of every one in that room or in the profession. To many men there was no inducement to go and get this honour. If, however, they tried to get the clause rescinded, they should look silly in the eyes of Parliament and of the country. It was a bad job, and he was afraid they would have to put up with it. In conclusion, he hoped a good many members would aspire to the honour before the clause comes into force, in order that the interests of the profession might be attended to in the way they would wish.

Mr. OLVER said he would quite as soon see all the members on the Council as all the Fellows. He was a Fellow—whether honourable or not was not for him to say—but he did not become a Fellow in order to become a member of the Council or Board of Examiners, and he did not desire it either. He denied also that the Fellows aspired to the Fellowship for the purpose of becoming members of the Council or Board of Examiners. He did not regret going in for the examination, as it caused him to look up many works and go through a course of study which did him no harm. He believed there were in the profession members quite as honourable as Fellows, and there was no reason why they should not become Fellows ; and he was sorry there should be all this objection to it. He would quite as soon see the Council and Board consist simply of members, but he thought it would be a cause for regret if the degree were done away with.

Mr. WIGGINS said he objected, and repelled to the utmost in his power, this dog-in-the-manger business of those who could not eat the grapes themselves and tried to prevent those who could. He might tell those gentlemen who were not within the pale of Fellowship, that it was their own fault. Let them not talk about their brains becoming so hard that they could not study and not retain. Why, they had been studying from the period they com-

menced their studentship at College, and their brain had been rendered more capable of retaining what was imparted by study. The lion they thought they saw in the path was a myth. He who hesitated was lost, and if they would only say, "Excelsior," and push over the difficulty as he had done, they would succeed ; and although the examination was one which no man need be ashamed to pass, they were as capable as any of their fellows. It only wanted determination, and the difficulties were passed.

The PRESIDENT reminded Mr. Wiggins that the discussion was in reference to Clause IX., and nothing to do with passing the Fellowship. He had listened with great earnestness, and all he could gain from Mr. Wiggins was that he was trying to persuade the profession to become Fellows. That was not the question. The question was whether Clause IX. was to rule all the members of the profession—whether next year they could only appoint members to the Council and the Board of Examiners, who are also Fellows.

Mr. BLUNT : You have only to send a cheque for £15, and they give you the Fellowship.

Mr. CARLESS said until counsel's opinion had been given to the contrary, he should say that a Fellow had no greater right to sit in the Council than he had. It would be robbing the profession of a birthright they received when they passed the College.

Mr. GOODALL moved the proposition contained in Mr. Kidd's letter, as follows :—"That it is absolutely necessary for the welfare and encouragement of the members of the Royal College of Veterinary Surgeons, that they have free and unlimited choice in the selection of members of the profession to serve on the Council. The members of this Association therefore petition the President and members of the Council, to take the necessary steps to have Clause IX. of the Supplementary Charter, granted by Her Majesty the Queen on the 23rd August, 1876, rescinded."

Captain RUSSELL repeated his opinion that the Supplementary Charter was intended as an addition to, and did not over-ride, that of 1844.

The PRESIDENT said he quite agreed that those who were members of the profession before the Supplementary Charter was passed, ought to be eligible for the Council and the Board of Examiners, if they liked to go in for it. As to being their own fault if they did not go in for the Fellowship—as Mr. Carless had said, that was no reason why they should be deprived of being on the Board of Examiners. Those members who were growing old in the profession, and whose experience was more matured, should be the proper people to rule the profession, and not the junior members of it who come afterwards. It was a gift given to the old ones, but in a few years it would only remain to the few, as there were very few who had accepted this offer of Fellowship. Had there been more, he did not think the question would have been raised, and they, as members of the profession, would have been satisfied if they had an adequate number to represent them ; but they had not. If many of them had known of this when they were in College, they could have passed as Fellows, but they did not know, and, as Mr. Meek had said, they could not give time to it now. He thought the clause, as it was framed, must have been an oversight.

Captain RUSSELL said he would propose, as an amendment : "That no steps be taken until the opinion of counsel has been received."

Mr. PRITCHARD seconded the original proposition.

Mr. GREAVES did not see the value of persisting in this proposition. It would be better to wait till they knew what the opinion of counsel was before taking action. He was quite of opinion that counsel's opinion would satisfy both members and Fellows.

Mr. BLAKEWAY said that the question really put by Mr. Simpson before the Council was, that a Committee of the Council should be formed to

investigate the matter under discussion, viz., Clause IX., and that was carried almost unanimously ; and at the last meeting that Committee recommended that the opinion of counsel should be taken.

Mr. CARLESS strongly advised that the opinion of the meeting be taken now, so that it could go forth generally what they thought.

Capt. RUSSELL asked them not to look upon him as their enemy, as he should certainly vote for the original proposition, because he thought they were justified in making inquiries into what was necessary. But he was afraid they were throwing their votes away, because when they met again they would have the opinion of counsel before them. He would, however, withdraw his amendment, and vote for Mr. Goodall's proposition.

The PRESIDENT then put the resolution, and declared that fourteen voted for it, and one (Mr. Wiggins) against it.

The PRESIDENT then moved, "That they should decide what works should be presented to the Birmingham Medical Institute, for their extreme kindness in granting the use of their rooms during the Congress Meeting,and what sum shall be awarded for that purpose." He went on to explain that Dr. Gamgee greatly assisted them in obtaining the rooms, and if they had had them in any other building they would have had to pay for them, and Mr. Gamgee thought, as they used the library, it would be well to give books.

Mr. MALCOLM said when he first went to ascertain the terms, he was told that as they were a branch of the medical profession, the rooms would be placed at their disposal entirely free. It was, therefore, entirely optional whether they gave a present or not.

Mr. GREAVES said it was perfectly right that they should make them a present. He suggested various suitable books, but thought, perhaps, the selection of them had better be left to a committee.

Mr. OLVER stated that it was quite understood by the Provisional Committee that they would be in honour bound to make a present to the Institute. The very handsome manner in which they were received by the medical profession of Birmingham added considerably to the success of the Congress. They not only placed the whole of their premises at the disposal of the Association, and decorated them, but more than that, although it was impossible for members of the veterinary profession to be admitted as members of the Institute, any member of the Association introduced by any of the medical gentlemen in the Midlands would be permitted to have the use of the rooms and library free. He (Mr. Olver) believed that as time went on they might be admitted as members of the Institute, which would be very valuable to them ; and whatever books they might now decide to give to the Institute, would also be for the use of the members of the veterinary profession. To bring the matter in form, he moved "That a committee be appointed, consisting of Mr. Parker, Mr. Malcolm, the President, and Secretary of this Association, to consider what books should be given to the Medical Institute, and that the sum of £10 be placed at their disposal."

Mr. BLAKEWAY seconded that, and suggested that some private information be obtained from Dr. Gamgee as to the books that should be given, otherwise they might give them duplicates of what they already possessed, and that would not be wise. He also proposed that, as there were several Honorary Associates on the list of members of the Association who did not subscribe to the funds, that they be asked to join in the gift, otherwise they would, perhaps, feel aggrieved.

Mr. GREAVES said that, as an Honorary Associate, he had already written to Mr. Gamgee that he should have great pleasure in presenting them with £5 worth of books out of his own pocket.

Mr. MALCOLM informed the meeting that another Associate, Professor Williams, had also presented the Institute with a copy of his books.

Mr. BLAKEWAY said the other Honorary Associates, Professors Pritchard, Fleming, and Walley, would no doubt be glad to assist them.

Mr. MALCOLM said they ought to include on the Committee the name of Mr. Olver, the President of the Provisional Committee.

The name of Mr. Olver was added to the Committee, and with that addition the resolution was put to the meeting, and carried unanimously.

Mr. OLVER wished to bring forward a matter of which he had given private notice, and which he thought would have been on the agenda paper. They were all interested, especially at the present time, in the question of electing members on the Council. When the present Act came into force, by which every member had a voting-paper and could vote for a certain member, they amalgamated with other societies to secure the election of that councilman, and each association named one gentleman for three or four years, and every time they carried their man. Unfortunately, through the laxity of their late Secretary, the thing lapsed, and since then they had not been associated and had not selected a member of the Council. If they were to have a member of the Association on the Council, they must try again to associate themselves with other associations to work with them. If it was to be done it must be done now, for it would be too late at the next meeting, which would be in January, and the Council meeting would be in May. He moved, as a resolution:—"That our Secretary be instructed to communicate with other societies, to get them to join with us in the election of one of our members on the Council of the Royal College of Veterinary Surgeons." He went on to say that the Liverpool, the Lancashire, and the Yorkshire were the associations with which they originally banded themselves. Their only member, Mr. Perrins, came out next time, and it would be unfortunate if the Association were left out. He thought they might give the Secretary instructions, and leave it in his power to do what he thought necessary and right with any of those associations.

The SECRETARY remarked that for the last two years they had tried to work in connection with other associations, but they would not work with them if they nominated more than one member. The year before last two members were nominated, and they had considerable correspondence with those associations, who would not work with them unless they withdrew one name.

Mr. GREAVES thought it was quite right that these associations should act together in the way suggested by Mr. Olver, and he seconded the proposition.

The proposition was carried unanimously.

The next business was the adjourned discussion on Mr. Banham's Paper on "Spavin of Horses," which was read at Nottingham.

The PRESIDENT invited discussion upon the paper.

Mr. MALCOLM produced a capital specimen of a case of Spavin, and explained that he brought it in reference, principally, to Dieckerhoff's theory mentioned in the paper, and especially to the pathology of Spavin. Dieckerhoff stated that Spavin commenced in the bursa under the oblique tendon of the flexor metatarsi. In this specimen they would see that it was one of Serous or Fibrous Spavin. If they got a little roughness on the surface of the bone, he (Mr. Malcolm) said unquestionably there was no operation which would give relief so well as cutting the tendon.

The members having examined the specimen, Capt. RUSSELL said there were Spavins and Spavins, just the same as they had in Nevicular disorder. One man told them it commenced in the bone under the capsular ligament, in the same way as you have Spavin commencing externally to the bone, and also in the articular surface of the bone. It was his opinion that in particular hocks they might have what is called "Jack Spavin," without having the

bursa at all complicated. Judging from what Mr. Banham said in his paper, it was quite possible to have a Spavin where the complication was entirely connected with the bursa. As far as his observation went, he believed Bone Spavins, and Occult Spavins, and Spavins seemed to commence invariably upon the articular surface—by the latter he meant the edge external to the synovial bursæ, and internally to the periosteum, immediately between the connections of the cuneiform bones.

Mr. GREAVES said he listened with very great pleasure to the reading of Mr. Banham's paper. It was a most exhaustive paper, and, in fact, left nothing for them to discuss. But different men had different views. He did not in every point agree with Mr. Banham, nor did he agree with Capt. Russell. In his (Mr. Greaves') opinion, in many cases of Spavin hereditary causes were in operation. He had seen colts born with large Spavins, and it could not be said that they originated from Inflammation in the synovial cavity, or Inflammation in the body of the bone. It was simply a process going on in the bone from hereditary causes, and he believed many other cases might be traced to hereditary causes which they did not think were so, because they did not show themselves externally until, perhaps, several years old. Very often a colt would show no Spavin until it had been broken, and then, when it was put to more stress than usual, they found it went a little stiff, which in a few weeks amounted to lameness; and he believed the germ or first cause was there before the animal was put into exercise. In nine cases out of ten he believed Spavin originated from a taint in the breeding, which was an hereditary cause. On that point he agreed with Mr. Banham, and the longer he was in the profession the more convinced he was that it was a sound opinion. Then, as regarded treatment of Spavin, it was the opinion of some veterinarians that the more severely you treat a case the better—get the little joints opened and the anchylosis closed as quickly as possible. Some veterinarians fired deep purposely to allow the joints to open, and when you get anchylosis the pain subsides; the horse goes stiff, but he goes with less pain. Then, as to severe blistering, some people said it abstracted internal inflammation, acting as a counter-irritant. Others said No! it tends to consolidate the bone and to create more inflammation, and made the process of anchylosis more rapid. He (Mr. Greaves) was of that opinion too. He was of opinion that, if you treat a Spavin at all, treat it severely—open the joints and get rid of the anchylosis as quickly as possible.

Captain RUSSELL said that some years ago, when he was in India, he had an extensive connection with the studs of the Bengal provinces, and talking about hereditary Spavins and Ring-bones, he did not believe in them for this reason: Every year a committee of military men, who were not veterinary surgeons, used to go round the different districts examining the yearlings and two-year-olds as to their qualifications for the service. If not qualified they were condemned, and remarks passed upon them that they were spavined or ring-boned; but when they came round again, when the animals had grown into four-year-olds, to see whether they were fit for the army or any service, it was generally found that the Spavin or Ring-bone had disappeared. In his (Captain Russell's) opinion these so-called Spavins or Ring-bones in the two-year-olds were enlargements of the epiphesis, which were absorbed as the animal grew older, and they were not unsoundnesses or Spavins. With regard to injecting iodine, his experience was against it.

Mr. PARKER said Captain Russell had taken the words out of his mouth as to enlargements. Up to two years old he did not believe there was any such thing as Spavins and Ring-bones; he believed they were protuberances. Lord Falmouth always liked to buy a colt with big joints.

Mr. GREAVES replied that when at College he remembered hearing a letter read, to the effect that Spavins and Ring-bones were as plentiful as blackberries

among colts in America when born. He had seen them himself, and they could be called by no other name ; and they remained so. As to opening the joints—he meant the joints between the small bones—not the true hock joint, there was not much danger ; but if they opened the true hock joint he thought there was great danger. At one time in his life he used to puncture Bog Spavin, and let out the contents, but on one occasion when treating a nice three-year-old he punctured it several times, and the last time he passed in his tube he wounded the capsule of the joint, and the consequence was intense inflammation was set up, and the colt died in a week after from Sympathetic Fever. If you opened the seat of a Bog Spavin, there was danger. Now in reference to judging Spavin, Mr. Banham told them that if it was Spavin he rejected the horse whether lame or not, and that was the reason no dealer in Cambridge would employ him. He had known veterinary surgeons with large experience reject any number of horses with enlarged hocks ; and the late Mr. Ellis, who had large experience, told him before he died that he had made many blunders in rejecting horses which appeared to have unsound hocks, when time proved that they were sound. He (Mr. Greaves) did not think it was right to reject a horse simply because it had strong hocks.

Mr. ORMOND (a visitor) recommended pigment of iodine as a remedy in place of the tincture for injection.

Mr. OLVER said he was very pleased with Mr. Banham's paper—it opened his mind to several matters he had not before given consideration to. He quite thought that Spavin formed in the oblique tendon, and he had no doubt that a division of that transverse tendon would in most cases be of considerable benefit. His experience agreed with that of Mr. Greaves that they got Spavin in newly-born foals and young animals. He had the veterinary superintendence of a large stud of thoroughbred stock, and they were continually getting these things—getting foals born in all shapes and forms—and the old stud groom would tell them that they would be all right in time, and they would be all right by the time they came to be sold. He knew a mare which was a perfect cripple when a foal, but which won everything before it up to six years old. It had Ring-bone and Spavin and everything that was bad up to two years old, but up to six years was one of the best of animals. He had no doubt there was a certain amount of hereditary taint in these matters of Spavin, but he thought there was still more importance attached to the fact that some hocks—weak ones—were more disposed to contract Spavin than strong ones. In examining horses, if a horse had strong hocks and yet moved well, he passed him—he would be all right in time. A horse with large hocks, if both are alike, was really better than a horse with smaller ones, if he moved well and no lameness.

Mr. OVER : Would you pass strong hocks without comment upon them ?

Mr. OLVER : That depends upon circumstances.

Mr. OVER : I think it is best to make some remark about them, whether you pass them or not.

Mr. AITKEN : Big hocks I would most prefer to smaller ones, if they are both alike.

The PRESIDENT said he passed all hocks, he did not care how big they were, if the horse bent them. If he flexed them properly and were six years old, he passed them, and did not care how big they were, provided also that they were both alike. If they were odd hocks he never passed them. In reference to the treatment, he had heard a great deal about firing through the skin in to the bone ; and he thought a man who did that ought to be had up for cruelty to animals. If they wanted to go through the skin at all they had no business to use a hot iron ; it was cruelty, and there was no advantage from it. By cutting through the hocks with a knife scientifically they could obtain all the effects that could be obtained by firing.

Mr. BLUNT: It acts very well sometimes.

The PRESIDENT: It is cruelty.

There being no more discussion upon the paper, the PRESIDENT proposed a vote of thanks to Mr. Banham for the paper. He should have wished tc have heard a better discussion upon it, as it was a matter of great importance. He wished Mr. Banham had been present to listen to the remarks that had been made, and to have answered any question.

Mr. GREAVES seconded the motion. He thought the paper was worth a cordial vote of thanks—they seldom had a more valuable paper brought before them. Alluding to firing, it was far preferable to fire deep, and if it was cruelty, it was best to do it effectually.

The PRESIDENT said by firing properly he meant to go into the skin, but not through it. A man who got through the skin did not fire properly.

The vote of thanks to Mr. Banham was then put to the meeting, and carried unanimously.

It was decided that the next meeting should be held at Worcester.

ROYAL AGRICULTURAL SOCIETY.

AT the monthly meeting held on Dec. 9th, Mr. Dent placed before the Council the reports of the Society's provincial veterinary surgeons, which had been received since the last meeting of the Committee, and which had been duly considered by them.

Professor COPE reported as follows:—

Foot-and-mouth.

Since the last meeting of the Committee, two outbreaks of foot-and-mouth disease have been reported. The first outbreak was reported from the West Riding, in the neighbourhood of Rufforth, near York. There were ninety cattle on the farm, one bullock was reported affected.

On inquiry, the veterinary inspector found that the animal in question was one of four which were in a field by themselves, that all the other cattle on the farm were healthy; it was the opinion of the inspector that the sick animal had injured its mouth by licking some irritating substance.

The second outbreak was reported from the neighbourhood of Lancaster, where there were seven cattle and thirteen sheep in a field together. The cattle had been purchased at Garstang Fair on November 24th, and two of them were found to have symptoms of Foot-and-mouth in their mouths on the 30th. The disease, however, has not extended to the other animals in the field, and the two which were stated to be affected are now reported to have nearly recovered.

Swine Fever.

The order for the compulsory slaughter of swine affected with this disease, and of swine herded with diseased swine, came into force on December 1st. The returns up to December 5th show a continued diminution in the number of outbreaks.

This report having been adopted, on the motion of Colonel KINGSCOTE, it was decided to renew the veterinary grant of £250 for the ensuing year.

The Committee recommended that the Agricultural Department be urged to take the necessary steps to organise a system for the investigation of the causes of outbreaks of contagious diseases of animals, and the duration of the vitality of the germs which produce them.

The Committee had met nine times and made nine reports, and they recommended that the following constitute the committee for the ensuing

year :—Lord Egerton, General Viscount Bridport, Lord Moreton, Hon. E. K. W. Coke, Hon. C. T. Parker, Sir M. White Ridley, Sir J. H. Thorold, Mr. G. M. Allender, Mr. A. Ashworth, Professor Brown, Mr. A. C. Cope, Mr. George Fleming, Mr. S. P. Foster, Mr. M. J. Harpley, Colonel Kingscote, Mr. A. Lloyd, Professor Robertson, Mr. G. H. Sanday, Professor Simonds, Mr. Wakefield, and Mr. Jacob Wilson.

Army Veterinary Department.

Gazette, December 8th.

The following veterinary surgeons on probation to be Veterinary Surgeons :—D. J. Barry, J. G. O'Donel, A. E. Richardson, W. R. Walker.

Gazette, December 15th.

The following veterinary surgeons on probation to be Veterinary Surgeons :—E. J. Lawson, H. Wilkinson.

In the *Gazette* of December 8th is published a list of Officers rewarded by Her Majesty for distinguished service with the Bechuanaland Field Force, and among them is the name of Veterinary Surgeon First Class F. Duck who is promoted to the relative rank of Major for the manner in which he carried out the duties of Inspecting Veterinary Surgeon during the expedition, and also in recognition of his previous services in South Africa.

With reference to these services, Lieut.-General Sir Redvers Buller, K.C.B., has expressed himself strongly on several occasions in his despatches from South Africa. In one of these it is mentioned that "Veterinary Surgeon Duck has been attached to the Frontier Light Horse for twelve months, and has had charge of the horses of all mounted corps. We have to thank his skill and unremitting attention for their efficiency. Mr. Duck has also accompanied the troops on all large patrols, and has frequently rendered me great service in action." And in a special recommendation to the Principal Veterinary Surgeon, the same distinguished General says : "During the whole time he was with me, I had to praise Mr. Duck for his attention to the horses and, I may add, for the great skill he showed in treating their ailments. I attribute the efficiency of my men greatly to his care of their horses, and though he experienced throughout the greatest difficulty in obtaining a proper supply of medicines, he appeared never to be at a loss in devising some make-shift for their relief or cure.

"Besides his great ability as a veterinary surgeon, Mr. Duck proved himself a very gallant soldier. He always accompanied me in all big patrols —whenever, in fact, there was a chance of his immediate services proving more useful in the field than in camp ; and I had great pleasure in specially reporting him for gallantry displayed during the retreat from the Hlobana Mountain, on March 28th, 1879,when, taking a dead man's rifle, he volunteered his services with the rear-guard, and was of great assistance at a critical moment.

"I have, under all these circumstances, felt that I should not be doing my duty if I did not bring Mr. Duck's services prominently to your notice."

Obituary.

No heavier loss has ever been sustained by the veterinary profession than that it now experiences in the death, at the age of seventy-one years, of Henri-Marie Bouley, Inspector-General of the Veterinary Schools of France, President of the Academy of Sciences, Member of the Academy of Medicine, and of the National Society of Agriculture, Commander of the Legion of Honour, Professor of Comparative Pathology at the Museum of Natural History, General Secretary of the Central Society of Veterinary Medicine of France, and member of many medical, veterinary, and scientific societies in that and other countries. Since the time of Bourgelat, the illustrious founder of modern veterinary science, no one has occupied such a distinguished position in our profession, and no one more deserved the position he achieved. Space prevents our giving more at present than a brief notice of this most talented and accomplished veterinarian, a more extended survey of his career being reserved for a future opportunity. So suffice it to say that M. Bouley was born in Paris in 1814, where his father was a very able veterinary surgeon—indeed, his family relations were more or less intimately and widely connected with the profession; consequently, he was born in it and to it. Studying and graduating at Alfort, he became a teacher there, and soon gained a favourable reputation as an anatomist, operator, clinician, and lecturer, as well as a brilliant and instructive writer; the articles he contributed so frequently to the *Recueil de Médecine Vétérinaire* during his early years testify abundantly to this. Occupying the most important chairs at that celebrated school, in time he became its Director, and subsequently he was appointed Inspector-General of the three veterinary schools which France maintains. During a professional career of more than fifty years, he had done more than any other veterinary surgeon to promote that wonderful development of human and animal medicine which marks the history of this century. Ever in the van, Bouley soon became conspicuous among the medical celebrities of the French capital, even of France, by whom he was recognised as a brilliant and eloquent speaker, clever in debate, a profound observer and reasoner, and an enthusiast in science and scientific work. No wonder, then, that by successive steps he rose to the highest dignity a man of science can aspire to in France—that of President of the Academy of Sciences, the most select and elevated of all the learned assemblies in the world, and which position he occupied at his decease. To show the esteem in which he was held by the Academy, its sittings were adjourned from his death until after his funeral, at which were representatives from it, the Academy of Medicine, and some of the other learned societies to which he belonged. Funeral orations were also delivered on the occasion by some of the greatest scientists of the present day in France; to these orations we will refer hereafter. In his later years, Bouley greatly enhanced his reputation by the courses of lectures on "Comparative Pathology" he gave at the Museum of Natural History, formerly known as the Sorbonne, where he occupied the professorial chair held by the late Claude Bernard, who lectured on physiology, but at whose demise the claims of comparative pathology caused the change. These lectures have been published, the first volume in 1882, entitled, "Le Progrès en Médecine par L'Experimentation;" and the second volume in 1884, under the heading of "La Nature Vivante de la Contagion." An ardent student of biological science he showed himself to be in these volumes, and in them, as in the Academy and elsewhere, he manifested his unbounded belief in the microbien origin of contagious diseases, and a most zealous supporter of Pasteur in his wonderful researches. When Pasteur announced his discovery of virus

year :—Lord Egerton, General Viscount Bridport, Lord Moreton, Hon. E. K. W. Coke, Hon. C. T. Parker, Sir M. White Ridley, Sir J. H. Thorold, Mr. G. M. Allender, Mr. A. Ashworth, Professor Brown, Mr. A. C. Cope, Mr. George Fleming, Mr. S. P. Foster, Mr. M. J. Harpley, Colonel Kingscote, Mr. A. Lloyd, Professor Robertson, Mr. G. H. Sanday, Professor Simonds, Mr. Wakefield, and Mr. Jacob Wilson.

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Gazette, December 15th.

The following veterinary surgeons on probation to be Veterinary Surgeons :—E. J. Lawson, H. Wilkinson.

In the *Gazette* of December 8th is published a list of Officers rewarded by Her Majesty for distinguished service with the Bechuanaland Field Force, and among them is the name of Veterinary Surgeon First Class F. Duck who is promoted to the relative rank of Major for the manner in which he carried out the duties of Inspecting Veterinary Surgeon during the expedition, and also in recognition of his previous services in South Africa.

With reference to these services, Lieut.-General Sir Redvers Buller, K.C.B., has expressed himself strongly on several occasions in his despatches from South Africa. In one of these it is mentioned that "Veterinary Surgeon Duck has been attached to the Frontier Light Horse for twelve months, and has had charge of the horses of all mounted corps. We have to thank his skill and unremitting attention for their efficiency. Mr. Duck has also accompanied the troops on all large patrols, and has frequently rendered me great service in action." And in a special recommendation to the Principal Veterinary Surgeon, the same distinguished General says : "During the whole time he was with me, I had to praise Mr. Duck for his attention to the horses and, I may add, for the great skill he showed in treating their ailments. I attribute the efficiency of my men greatly to his care of their horses, and though he experienced throughout the greatest difficulty in obtaining a proper supply of medicines, he appeared never to be at a loss in devising some make-shift for their relief or cure.

"Besides his great ability as a veterinary surgeon, Mr. Duck proved himself a very gallant soldier. He always accompanied me in all big patrols —whenever, in fact, there was a chance of his immediate services proving more useful in the field than in camp ; and I had great pleasure in specially reporting him for gallantry displayed during the retreat from the Hlobana Mountain, on March 28th, 1879,when, taking a dead man's rifle, he volunteered his services with the rear-guard, and was of great assistance at a critical moment.

"I have, under all these circumstances, felt that I should not be doing my duty if I did not bring Mr. Duck's services prominently to your notice."

Obituary.

No heavier loss has ever been sustained by the veterinary profession than that it now experiences in the death, at the age of seventy-one years, of Henri-Marie Bouley, Inspector-General of the Veterinary Schools of France, President of the Academy of Sciences, Member of the Academy of Medicine, and of the National Society of Agriculture, Commander of the Legion of Honour, Professor of Comparative Pathology at the Museum of Natural History, General Secretary of the Central Society of Veterinary Medicine of France, and member of many medical, veterinary, and scientific societies in that and other countries. Since the time of Bourgelat, the illustrious founder of modern veterinary science, no one has occupied such a distinguished position in our profession, and no one more deserved the position he achieved. Space prevents our giving more at present than a brief notice of this most talented and accomplished veterinarian, a more extended survey of his career being reserved for a future opportunity. So suffice it to say that M. Bouley was born in Paris in 1814, where his father was a very able veterinary surgeon—indeed, his family relations were more or less intimately and widely connected with the profession; consequently, he was born in it and to it. Studying and graduating at Alfort, he became a teacher there, and soon gained a favourable reputation as an anatomist, operator, clinician, and lecturer, as well as a brilliant and instructive writer; the articles he contributed so frequently to the *Recueil de Médecine Vétérinaire* during his early years testify abundantly to this. Occupying the most important chairs at that celebrated school, in time he became its Director, and subsequently he was appointed Inspector-General of the three veterinary schools which France maintains. During a professional career of more than fifty years, he had done more than any other veterinary surgeon to promote that wonderful development of human and animal medicine which marks the history of this century. Ever in the van, Bouley soon became conspicuous among the medical celebrities of the French capital, even of France, by whom he was recognised as a brilliant and eloquent speaker, clever in debate, a profound observer and reasoner, and an enthusiast in science and scientific work. No wonder, then, that by successive steps he rose to the highest dignity a man of science can aspire to in France—that of President of the Academy of Sciences, the most select and elevated of all the learned assemblies in the world, and which position he occupied at his decease. To show the esteem in which he was held by the Academy, its sittings were adjourned from his death until after his funeral, at which were representatives from it, the Academy of Medicine, and some of the other learned societies to which he belonged. Funeral orations were also delivered on the occasion by some of the greatest scientists of the present day in France; to these orations we will refer hereafter. In his later years, Bouley greatly enhanced his reputation by the courses of lectures on "Comparative Pathology" he gave at the Museum of Natural History, formerly known as the Sorbonne, where he occupied the professorial chair held by the late Claude Bernard, who lectured on physiology, but at whose demise the claims of comparative pathology caused the change. These lectures have been published, the first volume in 1882, entitled, "Le Progrès en Médecine par L'Experimentation;" and the second volume in 1884, under the heading of "La Nature Vivante de la Contagion." An ardent student of biological science he showed himself to be in these volumes, and in them, as in the Academy and elsewhere, he manifested his unbounded belief in the microbien origin of contagious diseases, and a most zealous supporter of Pasteur in his wonderful researches. When Pasteur announced his discovery of virus

attenuation to the Academy of Sciences, Bouley rose up and began an eloquent address by exclaiming : " This is but the beginning. A new doctrine opens itself in medicine, and this doctrine appears to me powerful and luminous. A great future is preparing ; I wait for it with the confidence of a believer and the zeal of an enthusiast."

Bouley's contributions to veterinary literature are numerous and valuable. The principal are his beautiful and classical treatise on " The Horse's Foot " —a work he did not complete ; the volumes of lectures already referred to ; many articles in the thirteen volumes of the " New Veterinary Dictionary," which is still in process of publication ; articles on Glanders, Rabies, and other subjects in two medical dictionaries ; pamphlets on veterinary matters, and the long list of contributions to the *Recueil*, of which he was editor-in-chief for half a century.

Bouley's personal influence was very great. Beloved by all those who studied under him, his example had a most excellent effect ; and to this influence, as well as to that which he wielded among the *savans* in France, must be credited the greatly increased popularity and esteem which veterinary medicine now commands on the Continent.

Bouley died from heart disease, from which he had suffered for some years, but which, until shortly before his death, did not deter him from toiling as hard and as devotedly at his life task as he had done thirty years before. A friendship of many years' standing had transformed in us what was before admiration and respect, into affection and esteem; and our last meeting with him at the International Veterinary Congress, held at Brussels three years ago, and of which he was unanimously elected President, served to intensify these feelings.

In heartfelt sympathy we tender our condolences to his bereaved family, and to our colleagues in France who mourn his loss, and are cast down at their bereavement. But the bereavement is not theirs alone; every member of the profession throughout the world shares in the misfortune that has befallen us in the disappearance of Bouley, the greatest luminary that has yet shone among our professional constellations.

Mr. Thomas Gregory, M.R.C.V.S., of Tunbridge, Kent, died suddenly from heart disease on November 25th, aged seventy-six years. Graduating in 1838, he had practised in Tunbridge for thirty-five years, and gained the respect and confidence of a wide circle of friends and clients during that long period.

Jurisprudence.

IMPORTANT BAD MEAT CASE AT DUDLEY.

The Dangers of Meat from Consumptive Animals.

A new and important point in connection with the sale, or the offering for sale, of diseased meat, came before the Dudley magistrates on the 9th December. On that day, before Mr. J. R. Tilley and Mr. John Bateman, Thomas Anchor Newry, butcher, of 42, New Street, and Upper High Street, Dudley, was charged by the Sanitary Inspector of the Borough with having in his possession, ready dressed for sale, two pieces of beef which were unfit for the food of man, the same being affected with Phthisis.

Mr. Warmington, the Town Clerk, prosecuted ; and Mr. Hugo Young, barrister (instructed by Mr. E. F. Whitehouse), defended.

The defendant pleaded not guilty, and the following evidence was taken :—

Police-constable Cartwright, of Woolaston, said he saw two halves of a cow at Thomas Smith's cowhouse, Woolaston. The meat was of a very dark

colour, with clotted blood on the inside and blood trickling from the sides. The cow's "elders" (udders) were very much swollen, to nearly three times their natural size, and a liquid like milk was oozing from them. Witness marked the meat and communicated with Mr. Pargeter, the Dudley Inspector of Nuisances.

Charles Pargeter said he found two pieces of beef in defendant's slaughter-house. The meat was very dark, and did not appear to have bled properly. On the wall hung lungs, and witness asked the defendant if they belonged to the same cow the dark meat came from. Newry said, "Yes"; and then witness took possession of them, for the defendant was directing his man to remove them. Mr. Abraham Green, the Cattle Inspector appointed by the Corporation, attended soon after. The marked meat was shown to Mr. Green, together with the lungs, and then the whole was removed to the police-station. At the other shop belonging to the defendant two other pieces of the same beef were found.

Cross-examined by Mr. Young: There was no concealment of the meat or lungs. Heard Mr. Newry tell Mr. Green that he had a certificate from Mr. Blakeway, Veterinary Surgeon.

Mr. Abraham Green, M.R.C.V.S., and Borough Inspector, was next examined. He said: I am appointed under the Contagious Diseases (Animals) Act for this borough. Shortly before nine o'clock on the morning of the 9th October I visited the defendant's slaughter-house and found two quarters of beef there. It had not the nice colour that good meat ought to have, being darker, and looking like the flesh of an animal that had not been slaughtered. Having formed that opinion, I asked for the lungs in order to strengthen it. To my surprise I found them studded with tubercular deposits, varying from the size of a pea to a hen's egg. The nodules could be plainly seen from the outside, and I found hundreds of them. I opened the lungs, and the sight at once showed me that the animal was in an advanced stage of Consumption. There were further appearances of the cow having recently calved, for there were signs of bruises on the tissues round the pelvic cavity. Mr. Warmington: If meat is not properly blooded, is it wholesome food? Witness: If the animal is healthy to begin with. Mr. Warmington: What, with the blood in it? Witness: If the animal was a healthy one to begin with, I should say it would not be unwholesome; I should not like to eat it, though. I don't think it would make healthy meat unwholesome—it would not be so palatable. Mr. Warmington: Could the meat in question, with all the symptoms you have mentioned, possibly be wholesome? Witness: No. Continuing, Mr. Green said: The milk from such an animal would affect people and transmit disease, as we all know, and I believe the meat from such an animal, if eaten, would do the same mischief. Mr. Warmington: Why? Witness: When I cut the lungs they were full of cheesy matter, showing an advanced stage of Phthisis. This was of long standing, of some months I should say. I afterwards saw three pieces of meat at the defendant's other shop, and their appearance was the same as that in the slaughter-house. I went there with Dr. Timmins, the Medical Officer of Health for the Borough. After cutting the lungs I squeezed some portions of them, and there was a great discharge from them of the cheesy matter already referred to.

Cross-examined by Mr. Young: When I went to the slaughter-house I said, "I can't condemn the meat; you must send for Dr. Timmins." I did that because it is not my duty to condemn the meat. The defendant told me he would get a certificate from Mr. Blakeway, M.R.C.V.S., and that his man had gone for it. A healthy animal not fully blooded would give fair meat. I observed something was wrong with the lungs before I cut them; you could see the nodules just underneath, they were plainly visible. I should

say that any cow with tubercles such as these was unfit for food. I have heard of Dr. Fleming, but do not think so much of him as a cattle pathologist. But of course he is not to be despised? Certainly not. Despite the opinion of Dr. Fleming, in his "Manual on Veterinary and Sanitary Science," that animals slightly affected should be fattened and slaughtered, and would then be fit for food, I disagree. Where the disease is at the beginning it would not be so dangerous. I think the milk would be first tainted. I do not think it is right to use it after the first stage of Consumption. I think for sanitary reasons you should not use tuberculous flesh, although an eminent man may say so. I do not know that nine out of every ten animals are affected. I know that the Jews reject every animal showing slight traces of disease, and that they sometimes have five or six animals slaughtered before accepting one. I know, too, that the meat of these animals is afterwards sold to Christians. Mr. Young: Don't you know, from a business point of view, they may be sold? Witness: I say that I believe it is wrong to use tuberculous flesh. Do you say that every animal which is killed soon after calving is unfit for food? Witness: No; a cow suffering from the first stage of Milk Fever may be killed and eaten. How long would you allow for the meat to become unfit? It depends; sometimes it may be two or three hours, and sometimes fifteen or sixteen; it is a question of degree. I say this cow was not fit to eat, because she had Tuberculosis. The beast was not bound to look emaciated, because she was affected with Tuberculosis; sometimes they grow fat in the early stages of Consumption. They may live two years and more in a state of Consumption.

Re-examined by Mr. Warmington: This animal was some months advanced. There has been a change in the opinion of veterinary surgeons as to the influence of the meat from consumptive animals. Dr. Fleming wrote the work in 1875, and if he had to write it now he would change his opinion, I believe. It is now generally accepted by the faculty that such meat is unfit for food.

By the Magistrates: The whole of the blood in the cow must pass through the lungs, and small particles of the matter would be taken into the blood, especially in the advanced stages. The lungs are the places in which the blood is purified. In the present case there are large abscesses in close connection with the capillaries; the blood would conduct disease to the flesh.

Mr. Daniel Timmins, surgeon, and Medical Officer of Health for the Borough, was the next witness, and he corroborated Mr. Green in every particular. He also expressed his full concurrence in the theory that an animal so badly diseased as the one in question was, if eaten, bound to communicate disease to those using the flesh for such a purpose. The cow was in a Consumption, as well as suffering from the effects of Milk Fever brought on after calving. She was not slightly, but considerably, affected. Germs of disease might pass from one part of the body to another, and therefore it was not only the lungs that were not fit to eat, but the flesh also. It was clearly established now that the germs might be transferred to the human system.

Cross-examined: Witness could not agree with the dictum of Dr. Fleming, although he was considered an authority, that animals in certain stages of Tubercular Disease might be safely eaten. He also believed that in the ten years Dr. Fleming would alter his opinion.

Mr. Young, for the defence, argued that Newry had no guilty intent. He had a certificate from Mr. Blakeway, a veterinary surgeon, and acted upon it. There was no trace of Consumption until the post-mortem, and his client could not have the scientific knowledge of veterinary surgeons. He then called:—

Mr. Jas. Blakeway, M.R.C.V.S., Stourbridge, who said: I saw the cow on

the 7th October, and found her in very good condition, far better indeed than I should expect a cow in an advanced stage of Consumption. She had recently calved, and was in the first stage of Milk Fever. On the following Thursday she was no better, and I sent my brother to see her. In my opinion she was not so far advanced in Milk Fever as to render her unfit for food, and I should have joined my brother in his recommendation to kill her for food. After the cow was killed I went to inspect the flesh, and I found the lungs affected with Tuberculosis; but these tubercles were enclosed in a cyst, and did not affect the lungs. The chest showed no signs of Tuberculosis at all, and it always does in an advanced stage. In my opinion, from what I saw of lungs and the lining of the chest, there was not sufficient to render the whole carcase unfit for food. I also examined the flesh and lungs after it had been condemned, and, after all I saw, I still think it might have been safely used by human beings.

Cross-examined: The cow was not in an advanced stage of Consumption, but her lungs were considerably affected. The blood of the animal only coursed through the sound part of the lungs.—Will you swear the blood is not affected?—I will not; it is a matter of opinion. The matter in the lungs is formed first from the blood, but afterwards they are cut off in a cyst from the other part of the lungs.—How do the cheesy matters grow?—They keep on growing, but they do not break into the otherwise sound part of the lungs until the last stage.

Mr. John Blakeway, M.R.C.V.S., brother of the last witness, corroborated, and added that he advised Smith, the owner, to have her slaughtered, believing she was in a fit state for food. On the 8th October he was asked for a certificate, and he gave one, saying she was fit for food. He had not seen anything to cause him to alter his opinion.

Mr. Thomas Chambers, M.R.C.V.S., said: I have heard the state of Milk Fever in which the animal was, and I consider she was fit for human food. The cheesy deposit in the lungs spoken of by Mr. Green was not of more than two or three months' standing. It was semi-fluid, but I do not think it was enough to condemn the flesh; it is a question of degree, and in my opinion it had not reached the dangerous point. There was plenty of fat and bark, although the meat was darker than usual. That is due to the animal lying down for a considerable time after calving, and to the fact that she suffered from Milk Fever.

Cross-examined: Did you see the lungs?—Only a portion of them.—Did you cut that open?—No; the piece I had was towards the edge.—Had the other portion been a mass of disease, would it have altered your opinion?—After hearing Mr. Green's evidence, I still think the meat was fit.

By the Magistrates' Clerk: At what stage does Tubercular Disease become dangerous?—When it affects the meat itself.

Re-examined: You backed your opinion, I believe, by having a piece cooked and eating it?—Yes

Thomas Smith, the late owner, said he gave £26 for the cow, and through a neighbour, who sold the cow to the defendant, he had £5.

The Magistrates inflicted a fine of £20 and costs on each summons, making £40 and costs, or two months' imprisonment; they also allowed Mr. Green and Mr. Timmins one guinea each.

Notes and News.

M. PASTEUR.—A Boulogne correspondent writes:—"The Havre Town Council has voted a sum of 1,000 francs to M. Pasteur, as a mark of gratitude for his services, and as a contribution towards the expenses of his philanthropic

investigations." One of the persons M. Pasteur inoculated, to prevent him being attacked by Hydrophobia—he having been bitten by a rabid dog—has died of the disease. It may be mentioned, however, that the protective inoculation was not made until a month had elapsed from the time of receiving the bite. He has now inoculated sixty-eight persons.

BERLIN VETERINARY SCHOOL.—For the current session, the number of students attending this school is 330, of whom 152 belong to the military division. This increased number has necessitated an alteration in the teaching. Professor Dieckerhoff has taken the chair of Clinical Medicine and also that of Equine Jurisprudence; Professor Möller has assumed the duties of teacher of Clinical Surgery; Assist.-Professor Peters takes the Polyclinic, and Lüpke the Canine Clinic. The distinguished Director of the school, Professor Roloff, is, we regret to learn, on temporary leave of absence owing to illness. His duty as Director has been transferred to Professor Müller, while Professor Eggling undertakes to lecture for him on Jurisprudence.

DOCKING.—The length of the dock—that is, the tail itself minus the hair—is from a foot to two feet in length, at the very longest; but a morbid taste at times appears to consider the natural dock too long to please the eye; the tail is, therefore, amputated to a variable extent, from an inch or two from the extremity to within a few inches of the body. There can be no doubt that, in the great majority of cases, the painful operation of "docking"—as chopping off a piece of the tail is termed—is performed without any reasonable pretext, and simply to gratify a morbid taste. Nothing can be more disfiguring, or even hideous, than such a fashion, when carried to such an extent as to leave a perfect horse with only a few inches of this most graceful and useful appendage, which was intended by Nature not only as an adornment and defence to the animal, but also a protection to most delicate and sensitive parts beneath. Not only does this docking make the horse a ludicrous effigy, but it renders it for life a victim to the torments inflicted by flies and other insects. The importance of the tail, in this respect, has been so fully recognised by the British army authorities, that an order has been recently issued to the effect that no docked horses are to be purchased as troopers. At one time British cavalry horses were docked and "nicked" (the muscles on the under surface of the tail so divided that this could not be drawn downwards, but ever after carried rigidly upwards like a wooden stump), as well as the ears cropped close to the head. History tells us of the disastrous effects of this mutilation, at least so far as the tail is concerned. For instance, Hartmann (*Traite des Haras*, p. 279) informs us that the English cavalry, during the last century, was several times almost rendered useless from the losses among the horses caused by the attacks of flies, from which they could not protect themselves; this happened in 1743 near Dettingen, and also at Fritzlar, Hochkirch, Wilhelmsthal. He also specially notes that in the Seven Years' War, which commenced in 1756, the flies caused such disorder amongst the horses of the English cavalry at Minden that the battle was nearly lost. All lovers of horses should enter their protests against the continuance of this absurd and pernicious fashion, which is rarely required in order to render the horse more useful, and then only in cases of disease or malformation, or it may be with a view to safety in harness. The latter, however, can only be extremely seldom, as in many countries—for example, the United States, Russia, and elsewhere, where harness horses are as largely employed as in the United Kingdom—docking is not practised. "Nicking" the tail is equally objectionable, except in those cases in which it is badly carried, when division of the muscles may rectify malposition or deformity. Of course, no objection can be raised to cutting the hair to any length which may be necessary, on the score of cleanliness or utility.—*Sidney's "Book of the Horse."*

MEMORY OF THE HORSE.—In 1854 "Pumicestone" won the Stewards' Cup at Goodwood. He ran often afterwards, and was generally ridden hard, for he was just good enough to lose, after the fashion described by reporters as "beaten, but not disgraced"; and at length he took such a dislike to racing that he was turned out of training, and ridden by Lord Wilton, his owner, as a hack. After an absence of four years from a racecourse, he was taken to Newmarket to be hacked by Lord Wilton, who chanced one day to be riding with the Duke of Beaufort close by the Ditch stables, when a heavy storm broke over the heath. The two horsemen took shelter in the stables, where some of the competitors were being saddled for an approaching race, and no sooner did Pumicestone see the once familiar preparation than he began to tremble violently, and broke out into a profuse sweat. He thought, no doubt, he was to be raced again. It was four years since he had been brought near anything connected with racing, but his recollection of the business, which usually included a severe finish, was perfectly fresh.

THE GERMAN ARMY.—The Veterinary Establishment of the German Army is fixed at 619 officers. The number of horses is 81,773.

HOW VACCINE VIRUS IS OBTAINED.—In a cow-house at the side of the old turnpike road, in the quaint village of Cos Cob, Conn., two calves can be seen on almost any day strapped to a bench, their feet sticking up in the air, and lots of quills protruding from their bodies. Around the room are razors, knives, bundles of quills, and ropes. A man is usually in attendance. This is a vaccine factory, one of the first established in the country. The quills remain for a short time in the flesh of the calves. As soon as they become filled with mucous—vaccine, as it is called—they are pulled out, sealed up air-tight, and in time do duty all over the world, finding their way to Germany and Australia. Some people imagine that the calves are killed by the process, or are injured so as to be unfit for use. This is not the case, but it is claimed that they are made more healthy by having these sores, for that is all the harm done to them. They seem to suffer very little, and after a few days frisk about as lively as ever. Calves of two colours are preferred at the factory—white and red—and only strong and healthy ones are selected. There is more demand for vaccine at the present time than at any previous period during the five years past.—*New York Herald.*

INOCULATION FOR CONTAGIOUS PLEURO-PNEUMONIA IN BELGIUM.—Impressed with the success which has followed the practice of inoculation in Holland, the Belgian Government has issued a decree establishing the practice of preventive inoculation for Contagious Pleuro-pneumonia under the same conditions as in the Netherlands, and sanctioning an indemnity of three-fourths of the value of the animals which may die in consequence of the operation. With this decree, which is issued to the Governors of the Provinces, is a circular, dated September 7th, containing instructions for veterinary surgeons as to the circumstances in which inoculation is to be resorted to, the manner in which the operation is to be performed, and the precautions to be adopted.

HORSEFLESH IN PARIS.—There are in the French capital nearly 100 establishments in which horseflesh is sold, and last year these disposed of 14,548 horses, 346 asses, and 32 mules.

AN AGED DONKEY.—A donkey, which is said to have been more than a hundred years old, has just died at Cromarty. The animal had been in the family of a Mr. Ross since 1779, and its age at the time it passed to its late owners was unknown.

Correspondence.

PHYSOSTIGMIUM IN IMPACTION.

DEAR SIR,—In continuation of Mr. Garside's interesting paper on "The Treatment of Colic with Physostigmium," I send you the following case which occurred in the practice of the Lahore Veterinary School during the past winter session.

The case in question—a medium-sized country-bred bullock, about eight years old, that was used for draught purposes, "turning a Persian water-wheel in a well"—was admitted into the hospital on March 31st, presenting all the usual symptoms of impaction of the omasum, "fardel bound," and, according to the statement of the owner, the bowels had not been moved for five days. The animal occasionally showed the ordinary symptoms of abdominal pain—kicking at the abdomen, etc. At 10 a.m., five grains of the extract of physostigmium was administered in a draught, and repeated at 2 and 5.30 p.m. As no result was obtained, ten grains was given at 10 p.m., and at 4 a.m., on the 1st April the bowels were moved, the first two or three motions being large in quantity, of a clay colour, and very fœtid. The animal continued to be purged till the evening of the 1st, when the fæces resumed their normal character. The case was an obstinate one, as the obstruction consisted of "bhoosa," or the chaff of the straw that is broken by the hoofs of the bullocks when they tread out the grain—the method by which corn is threshed in this country. Physostigmium has been constantly given in cases of constipation of the bowels in the horse at the Lahore Veterinary School, in from five to ten-grain doses, with most happy results, but this is the first in which it has been tried with cattle.

Lahore. J. NUNN, M.R.C.V.S.,

THE ARMY VETERINARY DEPARTMENT.

SIR,—I wish to call attention to a matter of considerable importance to officers of the Army Veterinary Department serving under the Warrant of 1878. I am rather surprised they have never done so themselves; probably the fear of offending the powers that be has something to do with it.

I allude to paragraph 14, which says: "Every year it shall be competent for Our Commander-in-Chief, on the recommendation of the Principal Veterinary Surgeon, with the approval of Our Secretary of State, to select a number of Veterinary Surgeons, not exceeding four, who shall be retained in the Service."

Referring to the Army List, I find—

In 1878	10 men joined	In 1882	0 men joined
„ 1879	5 „ „	„ 1883	8 „ „
„ 1880	6 „ „	„ 1884	14 „ „
„ 1881	6 „ „	„ 1885	8 „ „

It is not improbable that more may join this year.

Therefore, in 1888, 1889, and 1895, at least six, ten, and four men will have to go, no matter how good they are, or what services they may have rendered.

The compulsory retirement of these officers, in the flower of manhood, full of energy and life, may be looked upon in two ways:—

(*a*) As a loss to the Department.

Men with ten years' experience are bound to be more efficient than young fellows who have just joined, who have to learn army ways.

Commanding officers, rightly or wrongly, do not, as a rule, look upon the "sucking vet." with a very trustful eye; yet it happens in these warlike times that the commanding officer who would not dream of trusting the management of a squad to a raw subaltern, has to rely upon the judgment of an almost equally raw veterinary surgeon for the health of all the horses of his regiment or battery.

I hear that Mr. Walters, in his Suakim report, specially recommends that only experienced veterinary surgeons (*i.e.*, of at least a year's training) be sent on service.

Nevertheless, there stands the clause which ties the hands of the Principal Veterinary Surgeon, and those six, ten, four, etc., men, be their merits what they may, must go.

Now, these men must all be worthless, or they must be a loss to the Department when they retire. That they are not worthless has been proved by the splendid way the country has been served in almost every quarter of the globe, and in six recent campaigns.

The demands upon our branch of the service are daily increasing, and it is said that already nineteen men will be required to found the new India Department; probably, in course of time, more will be called for.

It surely would be better to retain the old men than to swamp the Department with inexperienced young ones.

I do not intend by these remarks to cast a slight upon the youngsters; but it stands to reason that when young fellows are thrown upon their own resources, with little or no experience of army ways, as very frequently must occur on foreign and active service, they will flounder, and be unable, however willing, to do the credit to the Department that old hands would. They do so in private practice sometimes.

(*b*) As a loss to the officers retiring.

Of course, I shall be at once met with the old argument that they entered the service with their eyes open; but I beg to respond that they could not know how this great tontine clause would work. They probably imagined that more would retire or die, being ignorant of the outrageous tenacity of life possessed by veterinary surgeons, who, notwithstanding all the endeavours of an enlightened Indian Government to kill them with overwork, sternly refuse to be wiped out.

How are men, who join, to know how many more candidates will be admitted during the year to increase the odds against their selections?

In 1879 only five entered, in 1880 and 1881 six, but in 1878 ten joined, and in 1884 fourteen, perhaps in 1886 twenty may be taken on.

Every young man, when he begins life, looks forward to the time when he will be able to marry and settle; at least, I think that most of those who get on in the world do. Judging by the young fellows I have seen, they are entitled to look for a wife amongst the upper middle classes. Fancy for a moment, a couple, say, with one or two children, accustomed to the society of officers and their wives, suddenly forced to begin life again. We all know the sort of practice obtainable for £800; but before one can be got, time must pass, and a hole is made in the capital. I may be told that they ought to economise while in the army. I do not think, speaking as an outsider, that a married couple can save much out of £250 in the service, and do justice to the credit of the Department. I may be asked: why should they keep up the credit of a department which they are almost certain to be turned out of? Well, I cannot say.

Now, just imagine the officer who has attended levées, and been presented at Court, starting in practice as a third-class veterinary! See him inquiring anxiously after the health of Mrs. Smyles, the coachman's lady; or the

interesting progeny of Mr. Somebody Else, the studgroom, with a view to the disposal of condition balls; or perhaps capping Farmer Styles (a dear old man, but unsavoury) with a view to the placement of cleansing drinks.

"Gross exaggeration," I hear some one say. I think not; queer things have to be done to start a practice; and with a wife and children dependent upon one, it does not do to stick at trifles. The more prudent naturally do not marry.

And why does this officer suffer thus? Why is he cast upon the world to begin life *de novo?* Has he failed in his duty? No; he made the blunder of entering under paragraph 14 of the Veterinary Warrant of 1878; and the Principal Veterinary Surgeon could not help himself, and with great regret, perhaps, lost a good man.

This clause has been tried in the Medical Department, found impracticable, and abolished, and now the option rests with the *medical officers*, to serve on or retire, as they please, upon completion of ten years' service.

I consider the Army Veterinary Department deserves all our sympathy. In fact, I have reason to believe that a strong feeling exists in the profession on the subject; at any rate, more than one civil and military veterinary surgeon has spoken to me about it.

The Warrant was promulgated when there were very few men in the Department, and, maybe, it was thought that very few would join, or very few be wanted, therefore the number from which the four were to be selected would be a very small one.

However, thanks to the enormous losses suffered by the country, especially in Afghanistan, through dearth of veterinary surgeons, a fresh departure has been taken.

I am not writing against the principle of selection; indeed, no one believes in it more than I do.

I think it acts as a spur to all men worth their salt; for they then know that if they distinguish themselves, they will be promoted or rewarded. But when selection is brought down to such narrow limits as this clause prescribes, it defeats its own object, and becomes a cruel absurdity. In my opinion paragraph 14 should be abolished, and replaced by one giving unlimited power of selection to the Principal Veterinary Surgeon.

If such a clause were substituted, every man would know that if he were worth keeping he would be retained, and also that if worthless he would be as certainly turned out.

In any case, paragraph 14 is an experiment which has already come to utter grief in the sister department, but seems doomed to cause the great loss to the army of a number of good, trained men, at the most useful and energetic period of their lives.

J. F. OLIVER.

[The Warrant referred to was issued when the Department had more officers than are on its establishment now. Under it there is, perhaps, not much danger of good officers being dismissed; it affords an opportunity of getting rid of those who, from various causes, are not likely to benefit the service, and of retaining those who shall have proved themselves worthy of retention.—ED. *V. J.*]

DISLOCATION OF THE PATELLA.

SIR,—It would be interesting to know what dislocation really is, if one is to understand what is meant by Mr. Tweedley in the VETERINARY JOURNAL. No one can read the article without giving him credit for its bold contradiction of what every one can see for himself, or fail to admire its elegant diction; but are we to disbelieve the evidence of our *post-mortem* examinations because M. Chuchu makes a theoretical calculation by which he proves

the impossibility of a thing with which most practitioners are too familiar? What veterinary surgeon of twelve months' experience has not seen or personally reduced the patella, or heard it cluck into its place?

I have seen many cart colts which at each step would throw out the patella in a visible manner, by inches of deviation, and heard it return at a distance of ten or twelve paces. I have been called to many cases in adults where the helpless limb has been hanging like a broken leg, and have replaced the patella by no greater display of science than pulling the limb forward with a side line; and, again, what student has not seen the trochlea of the femur worn away with friction in chronic cases? It would seem to be the custom now to accept without contradiction all the scientific but unpractical statements put forward by Continental writers, but I was not aware that M. Chuchu alone could obtain a proper knowledge of the anatomy of the stifle-joint. Mr. Tweedley says that to M. Chuchu belongs the merit of having "*abolished the error*"; but methinks that he has spoken too soon, and without reckoning the hosts of able practitioners who can diagnose an accident so comparatively common and easily seen and felt. Before English veterinarians are prepared to accept M. Chuchu's explanation they will have to see through his particular spectacles; as, from the following remarks, one would suppose he enjoyed an exclusive title to the term anatomist. Page 422, "M. Chuchu, inspired by his anatomical knowledge;" and again, p. 423, "M. Chuchu, enlightened by anatomy." Have we no anatomists? Does Professor Williams know nothing of the stifle-joint, and does not his illustration on p. 143 call to mind cases we have seen? ALFRED MALLER.

Brighton, *December 7th*, 1885.

HONOURS IN THE ARMY VETERINARY DEPARTMENT.

SIR,—Some days ago I noticed in the *Gazette* that two Deputy Surgeons-General had been awarded C.B.s. I have no doubt they deserved them; but my reason for troubling you is to ascertain, if possible, when some of our men are to get that reward. Amongst the members of the sister profession there are many C.B.s and K.C.B.s, but in ours there is only a solitary one of the former.

The most prominent member of our profession, the present Principal Veterinary Surgeon to the Forces, has not the C.B., he being, I believe, the only head of a department who has not got it. Now, if ever a man deserved such a distinction he does. In his hands the Department has come through numerous campaigns and other arduous services with flying colours, being the only one, as far as I know, which has never broken down or been censured. By his literary works alone he has earned the distinction. His writings on Hydrophobia have earned him the gratitude of mankind. His services have been acknowledged on the Continent and England, as far as possible, and no doubt he regards the LL.D. he holds as an immeasurably higher reward than a C.B.; but it seems strange that a man so honoured elsewhere should not receive a decoration which has been awarded to subordinate members of a less successful department.

In mentioning Dr. Fleming, I merely name our best man; and it is our interest to insist upon his being duly honoured, not only for his sake, but for ours; for if he gets no rewards what chance have we of getting anything?

I consider that so long as his services are unrewarded by the Government our entire profession is slighted, and I for one would strongly recommend that we take the best means in our power to make it known that we feel the insult. He has stuck up for us; now let us see if we cannot stick up for him.

Yours truly, F.R.C.V.S.

SUBSCRIPTIONS TO MRS. BOWLES' FUND.

	£	s.	d.
Amount to October 16th	39	0	0
Mr. J. B. White	1	0	0
„ H. M. Stanley	1	0	0
„ John Bell, Clonmel	1	1	0
„ Wm. A. Hurrell	0	10	0
„ Alfred Over	0	10	0
„ J. S. Barber	0	10	0
„ Hy. Blunt	0	5	0
„ W. H. Blunt	0	5	0
„ W. Carless	0	10	0
„ J. R. Simpson	0	2	6
„ S. Revill	0	5	0
„ Kay Lees, India	0	10	6
„ C. W. Gregory, Tunbridge	0	10	0
	£45	19	0

Dec. 18th, 1885. THOMAS GREAVES.

TO CORRESPONDENTS.

Several reports of societies' meetings, the introductory address at the opening of the Glasgow Veterinary College, and various communications, are pressed out of this number, and will appear in our next.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from W. Penhale, Barnstaple; Professor Penberthy, London; E. Stanley, Sydney, N.S.W.; G. Kinnell, St. Austell; J. F. Oliver, London; R. W. Burke, Cawnpore; J. Donald, Carlisle; J. D. Allman, London; A. Maller, Brighton; R. Dyer, Limerick; J. Nunn, A.V.D., Lahore; Professor T. H. Lewis, Edinburgh; F. Smith, A.V.D., Netley; E. Beddard, Wolverhampton; H. Kidd, Hungerford; A. Green, Dudley; T. Greaves, Manchester; Professor McCall, Glasgow; "F.R.C.V.S."; A. Broad, London; A. W. Hill, London; C. Gresty, Newcastle-on-Tyne; J. J. Meyrick, A.V.D., London.

BOOKS AND PAMPHLETS: First Annual Report of the State Veterinary Surgeon of the State of Iowa; *Ch. Cornevin*, Rouget du Porc; Encyklopadie der Gesammten Thierheilkunde und Thiersucht; *J. G. Wood*, Horse and Man; Bulletin et Mémoires de la Société Centrale de Méd. Vétérinaire; New South Wales Annual Report, Stock and Brands Department; Proceedings of the Third General Meeting of the National Veterinary Association; Transactions of the Pathological Society of London; *S. Rivolta*, Il Virus Moccioso Puro e la sua Importanza Diagnostica.

JOURNALS, ETC.: *Journal of the National Agricultural Society of Victoria; Revista Popular de la Exposicion Rural Internacional; Tidskrift für Veterinär-Medicin; Der Thierarzt; Echo Vétérinaire; American Veterinary Review; Quarterly Journal of Veterinary Science in India; Wochenschrift für Thierheilkunde und Viehzucht; Annales de Méd. Vétérinaire; Lancet; Live Stock Journal; Edinburgh Medical Journal; American Live Stock Journal; London Medical Record; Bladen Nitgegeven door de V. tot Bevordering van Veeartsenijkunde in Nederlandsch Indië; Revue Vétérinaire; Journal de Méd. Vétérinaire; Archiv für Wissenschaftliche und Praktische Thierheilkunde; Centralblatt für Veterinarwissenschaften; Mark Lane Express; Repertorium für Thierheilkunde; Animalia; Clinica Veterinaria.*

NEWSPAPERS: *Scotsman; Newark Advertiser; York Herald; Glasgow Citizen; Standard; Birmingham Daily Post.*